Rocky View County

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Servicing Strategy

Final Report - April 2021

Executive Summary

This Solid Waste Servicing Strategy (the Strategy) replaces the 2007 Solid Waste Master Plan as the planning and guidance document to assist Rocky View County (RVC) to provide solid waste management options and support for residential, commercial, institutional and construction sectors, guided by the following desired outcomes:

Solid Waste Management Ideal State

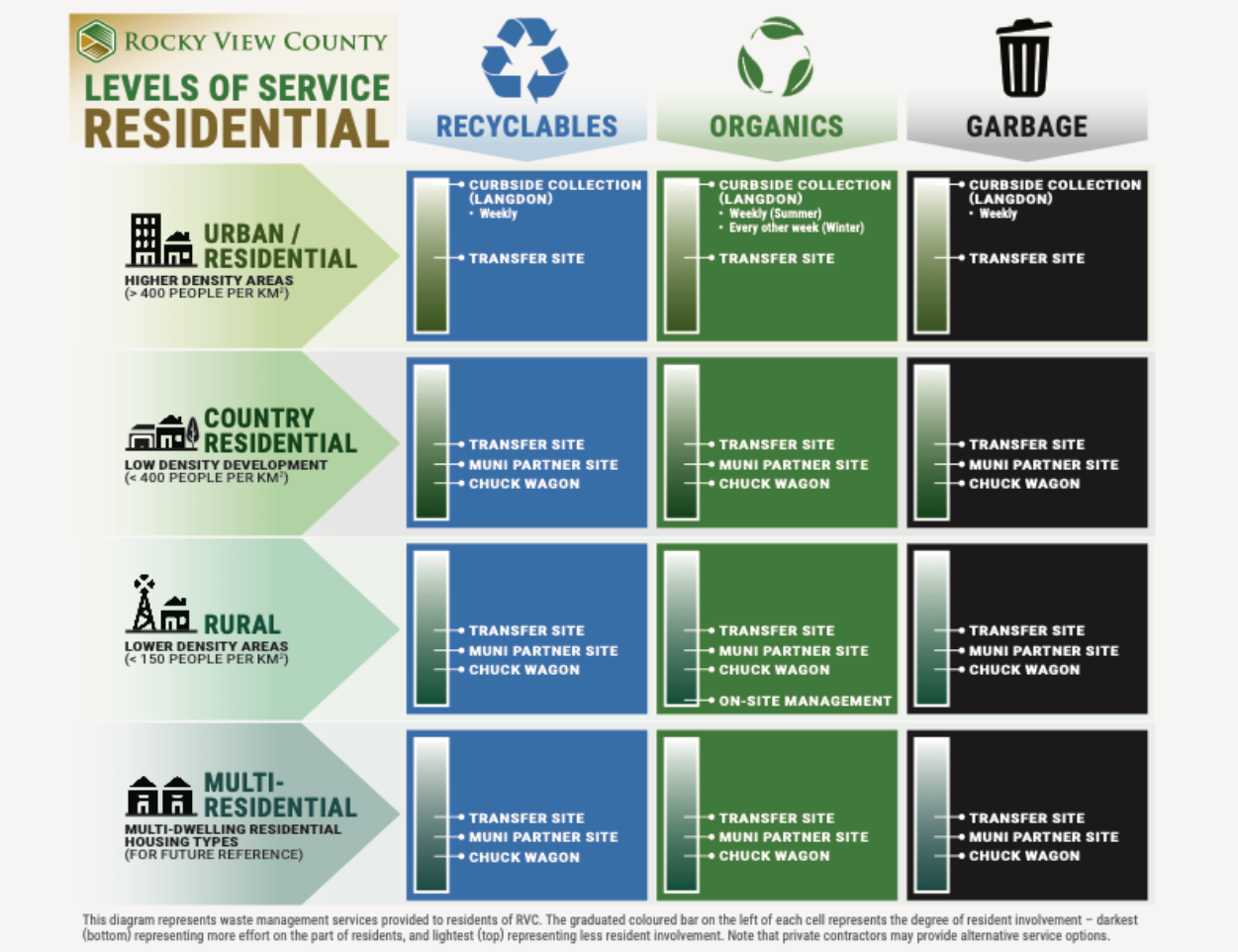
Waste in Rocky View County is eliminated where possible, with a focus on remaining waste being reused or recycled in systems that maintain products and materials at their highest use.

RVC Role

Establish and support services (or service delivery models) in Rocky View County that enable the elimination of waste and encourage a circular economy.

Levels of Service

The Strategy has been defined under various levels of service for different sectors, as demonstrated below for the residential sector:



As RVC does not provide direct lines of service to Industrial, Commercial and Institutional (ICI) and Construction and Demolition (C&D) sectors (with the exception of transfer site use and agricultural roundups), the levels of service for these sectors are based on private contractor services. However, there is an expectation that RVC businesses and organizations meet a future level of service standard as a part of the work the Strategy recommends. The standards and programs for these sectors will likely reflect the levels defined for the residential sector and those of neighbouring municipalities.

Outcomes of the Strategy are pursued through a series of goals structured to support the ideal state. Objectives and actions required to meet the waste management goals were developed based upon a review of the current Rocky View County waste management system and infrastructure, and expected future needs as identified through insights based on best practices and stakeholder input:

Goals and Objectives

Goal 1: Residential waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy (Reduce, Reuse, Recycle).

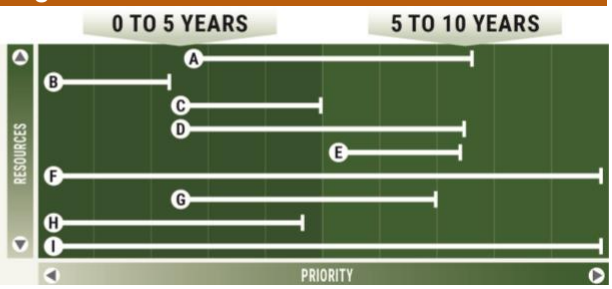
Goal 2: Industrial, Commercial and Institutional (ICI) waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Goal 3: Construction and demolition (C&D) waste produced from new developments and/or renovations will be minimized and resource reuse maximized.

Goal 4: Rocky View County will be seen as a preferred location for markets and industries that consume recyclables and/or actively minimize waste.

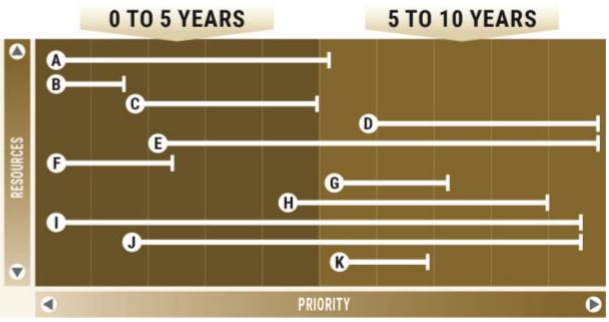
Goal 5: Rocky View County influences and leverages regional, provincial and national opportunities to advance 3Rs policies and programs.

- A. Enlist regional and inter-municipal partnerships.
- B. Harmonization of site services.
- C. Consistent formula for external sites.
- D. Identify economies of scale across sites.
- E. Harmonize regional RFP requirements.
- F. Actively support waste management councils, boards, committees.
- G. Participate in regional waste strategies.
- H. Lobby for provincial 3Rs policy.
- I. Support Regional, Provincial and National targets.



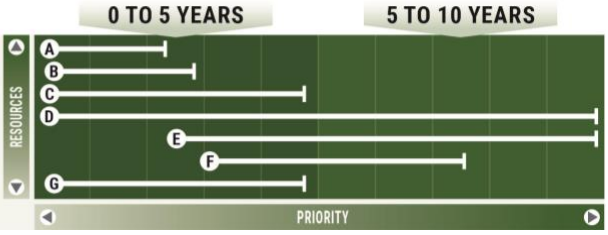
Goal 6: Rocky View County establishes appropriate levels of service that ensure efficient waste management and diversion options are accessible to County residents.

- A. Establish service level definitions and criteria.
- B. Review cost of servicing.
- C. Select preferred funding model.
- D. Criteria for transfer of responsibility for waste management to RVC.
- E. Remain current on Waste to Energy.
- F. Consider EPR in programming choices.
- G. Consider accepted best practices in establishing service levels.
- H. Identify opportunities to enhance levels of service.
- I. Improve site design, conditions, and accessibility.
- J. Consider site additions or enhancements in underserviced areas.
- K. Consider Take-it-or-Leave-it programs.



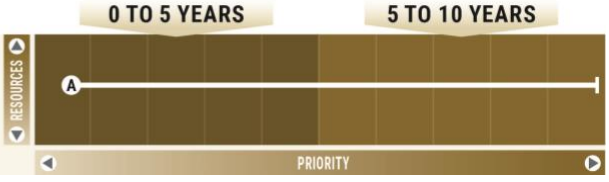
Goal 7: RVC measures and demonstrates success of its programs and is recognized as a leader in waste management.

- A. Implement standard data reporting methodologies.
- B. Enhance data collection at sites.
- C. Expand sources of data regarding waste generation.
- D. Share results with public and industry.
- E. Require transparent reporting of material destinations.
- F. Establish an internal green procurement policy.
- G. Address illegal dumping.



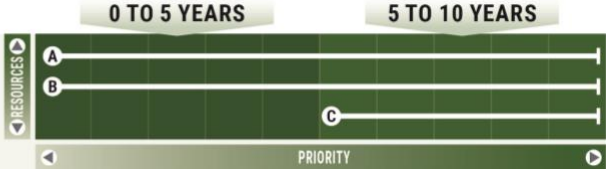
Goal 8: Legacy landfills are effectively managed.

- A. Perform groundwater monitoring.



Goal 9: Advocate with regional neighbours to promote waste to energy to become the go-to for waste disposal.

- A. Research and remain current on WtE solutions.
- B. Liaise with regional partners on WtE updates and opportunities.
- C. Support proven WtE initiatives at a local level.



Measurement and Reporting

RVC has a limited waste tracking system and a lack of data regarding amount of material handled by partnering municipalities or private entities. Closing the data gap for all sectors is a recommended priority to support transparency, accountability, and overall improved waste management in the County. Actions to close these gaps include building a more robust tracking and reporting system and forming relationships with waste generators in all sectors. Corresponding performance metrics are identified for each goal and supporting key performance indicators (KPIs) have been developed to assist in measuring progress towards applicable objectives and actions. Building more comprehensive data through this process will ultimately lead to improved reporting options and quality.

Financial Implications

A cost of service review was conducted for the various solid waste and recycling services currently provided to residents within RVC. A review of Corporate-level operating costs was also performed to identify and calculate appropriate overhead costs which should be allocated to the Solid Waste and Recycling Services to reflect fully loaded costs. It is observed that direct operating expenses represent approximately 71% of the annual funding requirements, while administration oversight and management expenses represent an additional 17% (remaining 12% represent corporate overhead and transfers to capital reserves).

A funding model review was also conducted to address how costs could be covered for the levels of solid waste and recycling services provided to constituents within RVC going forward, considering customer, environmental / societal, and internal financial perspectives.

The proposed future funding model includes incorporating the costs of allocated department administration costs as well as direct operating and maintenance (O&M) costs and cart replacement contributions for curbside collection services in the charges for these services.

Utility user fees (estimated at $5-$6 / household / month) can also be introduced to fund the base level of costs associated with RVC's portfolio of self-haul diversion services and activities, with a corresponding reduction of ~$900,000 to $1,000,000 in annual requirements from the tax base (this translates to ~ 50% of total property tax funding Waste and Recycling Services received in 2019).

At the same time, maintaining the approach of charging usage fees to customers for garbage disposal materials will further encourage waste diversion.

From a regional partnership perspective, maintaining agreements with neighbouring municipalities for shared use of transfer sites, recycling depots, and other services makes financial and operational sense. Reviewing and updating intermunicipal agreements can help to ensure revenues from neighboring municipalities fund their fully loaded costs of service.

A financial impact analysis on both RVC's capital and operating budget requirements to respond to RVC's future growth was also performed. Recommended actions, including expanding (Bragg Creek) and supplementing (Springbank, Springhill, new east side) transfer sites, conforming to curbside best practices and adding administrative capacity, is estimated to require a capital investment requirement of ~$4.3 million, with annual cash flow requirements increasing by approximately $726,000 (by 2026), growing to approximately $775,000 by 2031.

Remaining funding, beyond utility user fees, required to support RVC's enhanced suite of self-haul services would likely need to be sourced from property tax. This would limit the total potential property tax funding savings from the implementation of a new utility user fee.

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1 Background

In 2007, a Solid Waste Master Plan was developed for Rocky View County (RVC), providing an inventory of the existing system and addressing priorities, needs, and opportunities of the County. After more than a decade, the policies within the Master Plan need to be refreshed, and a servicing strategy developed for today's context.

This report offers a solid waste servicing strategy (for residential, ICI and C&D sectors) with corresponding cost/funding models. This servicing strategy is intended to replace the 2007 Solid Waste Master Plan as the planning and guidance document to assist the County to provide solid waste management options to its residents. The strategy will serve to move the County towards its mission and goals with an approach that targets RVC's various sectors, while also recognizing its unique rural characteristics. Part of the strategy's future influence is its expectation to guide County policies and plans to integrate solid waste management issues and realities.

2 Solid Waste Ideal State, Goals and Objectives

The first step of strategy development was a process to develop an ideal state, goals and objectives that reflect the current context of solid waste management in RVC. The development of a refreshed set of goals for Solid Waste Management services in Rocky View County started with a review of existing RVC documents, including:

- 2007 Solid Waste Master Plan
- 2018 County Plan
- 2008 Solid Waste and Recycling Policy
- 2020 Municipal Development Plan
- Council Strategic Plan, 2019
- Area Structure Plans

Goals and objectives from these plans were consolidated and discussed with RVC staff to provide updates where necessary or desired. Goals in neighbouring jurisdictions were also reviewed to provide regional context.

This led to proposed Solid Waste Ideal State and Goals that were presented to, and supported by, Council in May 2020.

Further discussions with RVC staff led to more comprehensive goals and supporting objectives as part of the revised Ideal State and Goals as outlined below. A full document including Objectives and Actions is included in Appendix A.

2.1 Solid Waste Management Ideal State

Waste in Rocky View County is eliminated where possible, with a focus on remaining waste being reused or recycled in systems that maintain products and materials at their highest use.

2.2 RVC Role

Establish and support services (or service delivery models) in Rocky View County that enable the elimination of waste and encourage a circular economy.

2.3 Goals

Goal 1: Residential waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy*.

Goal 2: Industrial, Commercial and Institutional (ICI) waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy*.

Goal 3: Construction and demolition (C&D) waste produced from new developments and/or renovations will be minimized and resource reuse maximized.

Goal 4: Rocky View County will be seen as a preferred location for markets and industries that consume recyclables and/or actively minimize waste.

Goal 5: Rocky View County influences and leverages regional, provincial and national opportunities to advance 3Rs policies and programs.

Goal 6: Rocky View County establishes appropriate levels of service that ensure efficient waste management and diversion options are accessible to County residents.

Goal 7: RVC measures and demonstrates success of its programs and is recognized as a leader in waste management.

Goal 8: Legacy landfills are effectively managed.

Goal 9: Advocate with regional neighbours to promote waste to energy to become the go-to for waste disposal.

*see Appendix A

3 Solid Waste Servicing Strategy

As a plan of action designed to achieve RVC's overall goals, the Solid Waste Strategy has been developed to outline the objectives and actions associated with RVC's goals prescribed under the Solid Waste Management Ideal State. These have been defined under various levels of service for different sectors, including timelines for achieving the different objectives.

3.1 Levels of Service – Residential

The levels of service currently provided by RVC for residents are outlined in Figure 1 below. As shown, residential service levels are divided into different lines of service as differentiated by types of residential communities: Urban, Country Residential, Rural and Multi-Residential. These lines of service divisions were established by reviewing RVC standards, including County Plan, Land Use Bylaw, Recreation Needs Assessment and the definitions used in the Specialized Municipality application. The first three are defined primarily by density, while multi-residential is based on dwelling type.

The levels of service contained in Figure 1 are based on the following definitions:

Curbside Collection

Curbside waste collection is currently provided by RVC only in the Hamlet of Langdon. This service includes weekly collection of recycling, organics and garbage carts:

- Recycling – Mixed paper, cardboard, plastic #2, #4, #5, film, bags and wraps, metal, refundable containers (240 litre cart)
- Organics – food, yard, soiled paper, pet waste, other compostables (240 litre cart)
- Garbage – general household waste (120 litre or 240 litre cart)

Curbside collection is also utilized by residents in a number of residential communities. These programs are coordinated by these communities or privately contracted by individual residents, with varying levels of service.

Best practices for curbside collection suggest service levels for a 3-stream curbside collection system to be:

Garbage – every other week (when paired with organics collection)

Recyclables – every other week (assuming a large enough collection container)

Organics – weekly in summer; every other week in winter

Curbside collection is normally offered in higher density residential area (defined in this level of service as >400 people/km^2), although it may also be offered in residential communities that fall under the Country Residential category.

As most provincial jurisdictions (including Alberta) are embracing an Extended Producer Responsibility (EPR) approach that leads to increased harmonization around recycling program characteristics, considering these in local program design is an important proactive approach. Looking to BC's EPR program shows the following materials accepted for recycling:

Paper – newspaper/flyers, magazines/catalogues, telephone books, office paper, corrugated cardboard, boxboard, paper bags.

Containers – paper cups; gable-top cartons; aseptic cartons; aerosols; steel cans; aluminum cans and foil; plastic jugs, jars, tubs, pails and bottles; plastic clamshells; plastic trays; plastic drink cups; plastic garden pots.

Glass – non-deposit glass bottles and jars. Collected separately, usually drop-off.

Drop-off only – Plastic bags and film, foam containers and trays, foam packaging, flexible plastic packaging, woven and net plastic bags.

In recognition of best practices and market evolution, it is recommended that standard level of service for Curbside Collection be:

Three-stream collection: garbage (choice of 120 or 240 litre cart every other week), organics (240 litre cart weekly in summer; every other week in winter), recyclables (240 litre cart every other week).

Current materials accepted are based on existing markets and should remain consistent until markets evolve through introduction of an EPR program in Alberta, at which point accepted materials will evolve.

Self Haul Approaches

The proposed levels of service for less densely populated areas (Rural and Country Residential) are established around self-haul approaches that require residents to deliver their materials to collection sites. These encompass permanent transfer sites and temporary chuck wagon locations.

Transfer site

RVC own and operate (through contract) three full-service Transfer Sites (Bragg Creek, Irricana, Langdon). All assets and facilities at the sites are owned (or rented) by RVC, and site maintenance and/or upgrading is done by RVC. Sites include acceptance of the materials outlined below, and sites are staffed during opening hours.

Materials accepted:

- Agricultural pesticide containers (empty, triple rinsed)
- Agricultural pesticides (obsolete)
- Appliances (fees apply)
- Automotive batteries
- Bale twine (free from debris & in clear bags)
- Branches (<6" diameter)
- Bunker bags, silage tarps & bale wrap (rolled)
- Cardboard
- Cell phones
- Christmas trees (seasonal)
- Electronics
- Florescent light bulbs (residential)
- Garbage (fees apply)
- Gear oil, transmission fluid & hydraulic oil
- Glass
- Grass & leaves (seasonal)
- Household hazardous waste
- Metal
- Newspaper
- Paint
- Paper (mixed)
- Plastic film
- Plastics (household)
- Propane tanks
- Textiles & small household items (Diabetes Canada)
- Tires (rims removed)
- Used motor oil, filters & containers
- Wire (rolled and free of non-metal items)

The Irricana transfer site is also part of the Provincial Ag Plastics Recycling Pilot Program, accepting clean grain bags, as well as twine.

This list of materials accepted has evolved over time to provide a reasonable level of service considering local constraints, as presented as a goal in the 2007 Solid Waste Master Plan. It is reasonable to continue to include these materials with adjustments made based on proposed regular site service reviews. Expansion to include additional divertible materials such as mattresses may arise during suggested site service reviews. Similarly, materials such as Styrofoam may be added in conjunction with the introduction of EPR.

Transfer sites are located so they are accessible by the majority of RVC residents within a distance of 15 km. The 15 km proximity standard was established in Alberta's Transfer Station Technical Guidance Manual (2008).

It is recommended that standard level of service for transfer sites include:

- Staffed facility – days and hours confirmed by proposed review of transfer site use, with allowance for variances in locations and seasonal operating hours.
- Accepting established RVC list of materials
- Accepting garbage and certain materials (appliances) for a fee
- Accessibility by residents within 15 km (includes municipal partner sites)

Chuck Wagon

Chuck Wagons are mobile small-scale recycling and transfer sites, rotating between fixed locations on specific days and times. RVC currently operates five year-round weekly Chuck Wagon locations. A contractor owns and operates the Chuck Wagons.

Accepted materials:

- Beverage containers
- Cardboard
- Garbage (fees apply)
- Glass
- Metal cans
- Newsprint & magazines
- Paper (mixed)
- Plastic bags
- Plastics (rigid)
- Textiles (Diabetes Canada)

Similar to transfer sites, this list has evolved over time to provide the level of service reasonably delivered at these smaller sites. Using these materials as a foundation, with adjustments made based on proposed regular site service reviews, will provide a standard level of service while also facilitating regular updates as warranted.

It is recommended that standard level of service for chuck wagons include:

- Staffed facility – days and hours confirmed by proposed review of facility use.
- Accepting established RVC list of chuck wagon materials
- Accepting bagged household garbage for a fee
- Accessibility by residents as part of the 15 km accessibility standard

Chuck Wagons are an alternate choice of service for locations that meet a supplemental need in higher population locations not serviced by a transfer site (e.g., Elbow Valley, Springhill, Bearspaw) or more remote locations with less access to a transfer site (e.g., Keoma, Madden). As Chuck Wagon capacity is approached, transition to a transfer site service level is anticipated (as outlined later).

Municipal partner site (variable, but similar to transfer site)

RVC has inter-municipal agreements with five neighboring municipalities (Airdrie, Beiseker, Cochrane, Crossfield and Scott Lake), allowing RVC residents to use their Transfer Sites or Recycling Centres. The opportunity to access these sites offers a collaborative way to partner with local sites, however, services offered at these sites are distinctly different between locations. Encouraging consistent levels of service between RVC and partnering sites will encourage high level and harmonized services. Therefore, the ultimate goal should be for partner sites to have the same (or higher) standard level of service as RVC transfer sites.

Figure 2 shows the population density in RVC. As shown, Langdon is the only area with density over 400 people per km^2, which corresponds with it being the only location provided with curbside collection by RVC. It can also be seen that other higher-density areas correspond with residential developments, including Watermark, Pinebrook Estates, Elbow Valley and Cambridge (see Figure 4). However, as shown, very few meet the threshold for Country Residential (Figure 2), although a number may be close as suggested by Figure 3. These residential developments arrange for their own waste collection services, with a range of service levels, although most provide curbside collection of recyclables and organics, even if only on an optional basis. For consistency, It is recommended that residential developments providing their own waste collection services conform to the RVC Curbside Collection levels of service as outlined above.

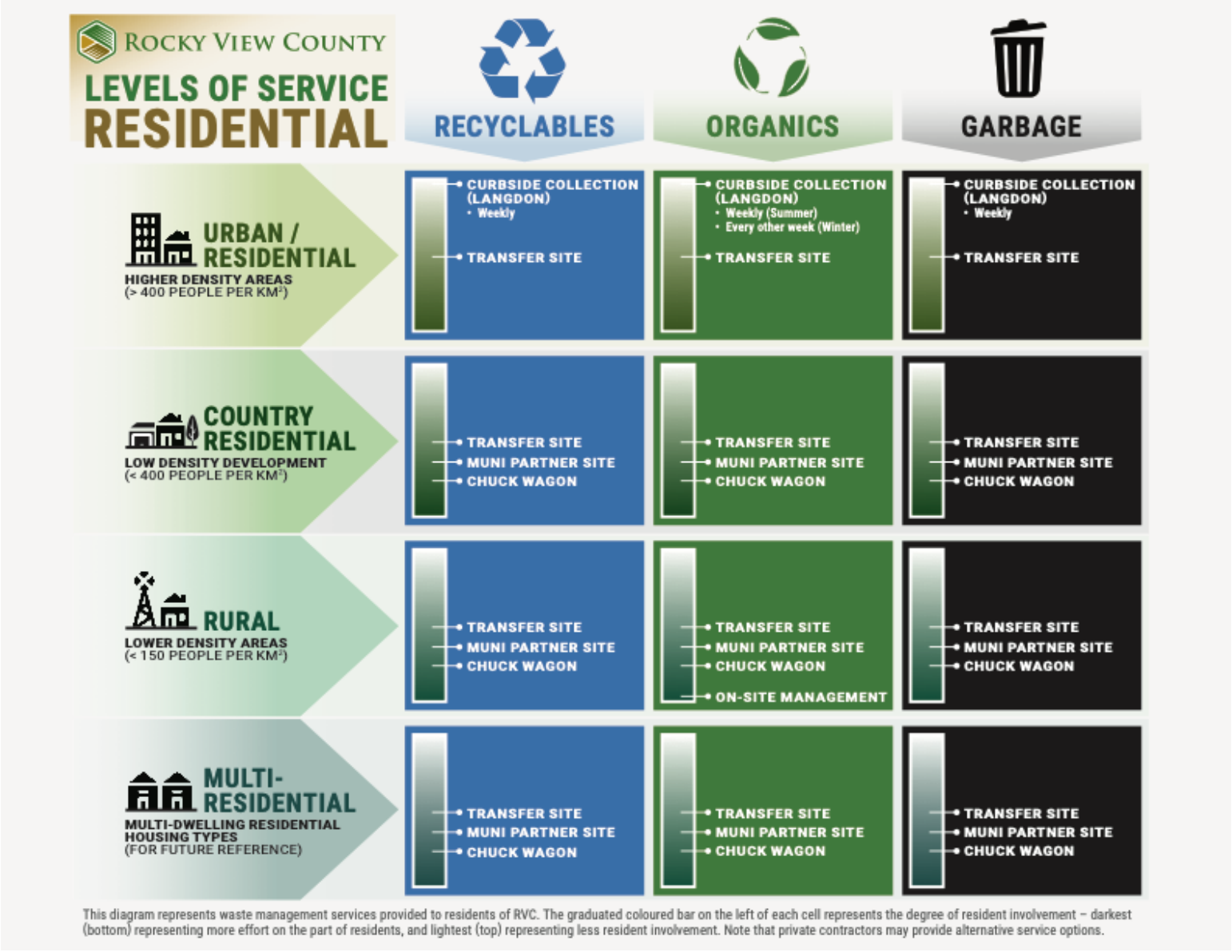


Figure 1: RVC Residential Levels of Service

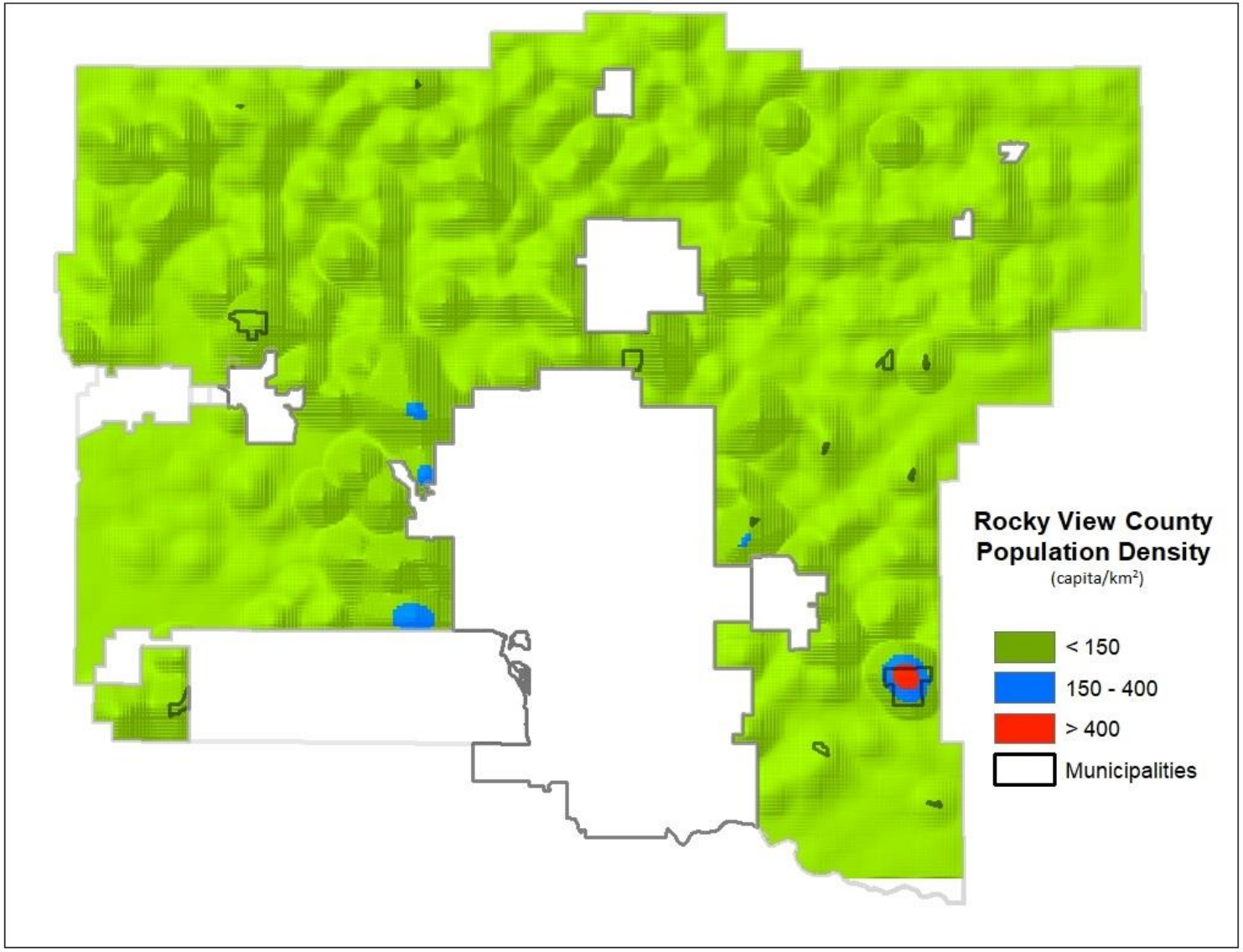


Figure 2: RVC Population Density by Service Category

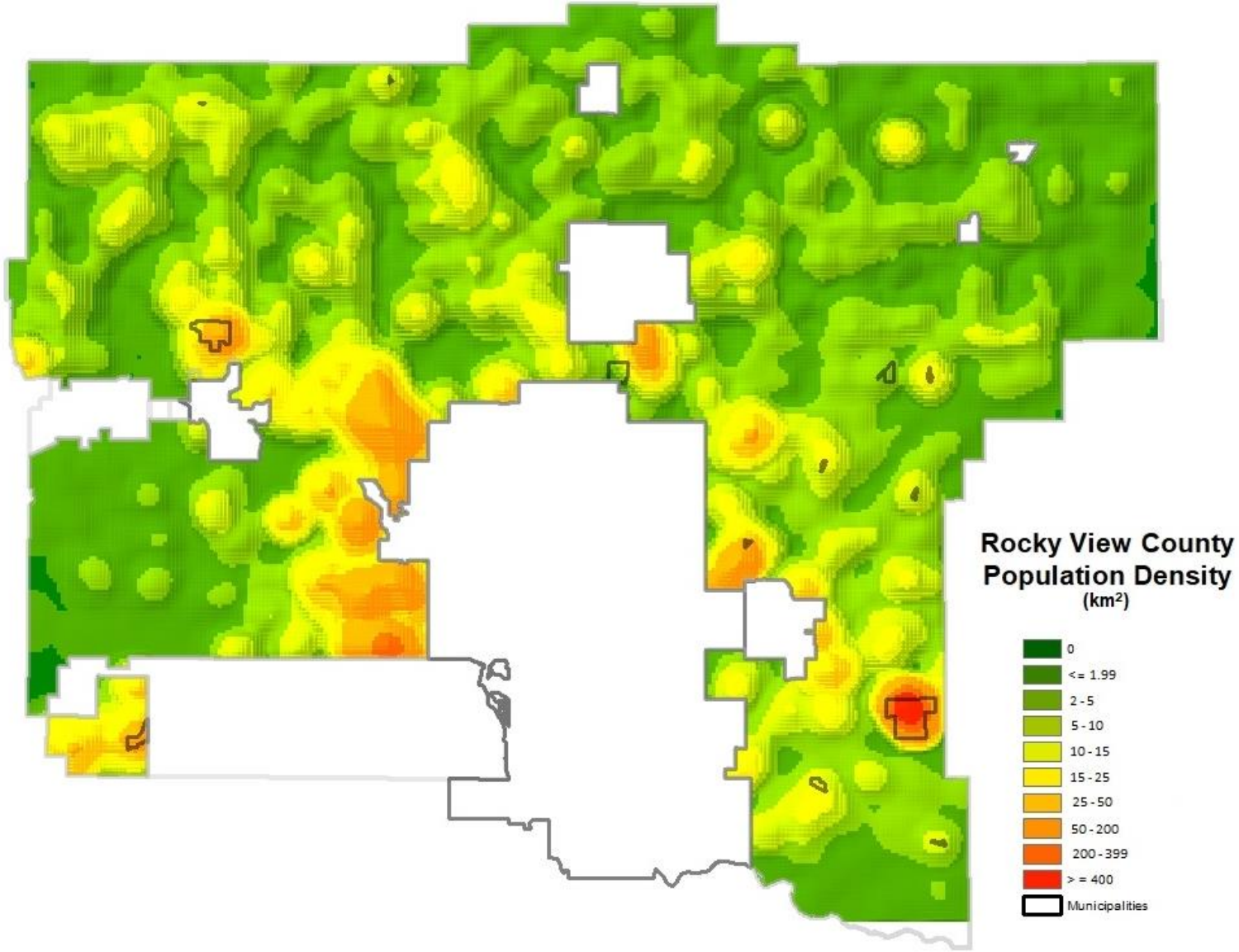


Figure 3: RVC Population Density

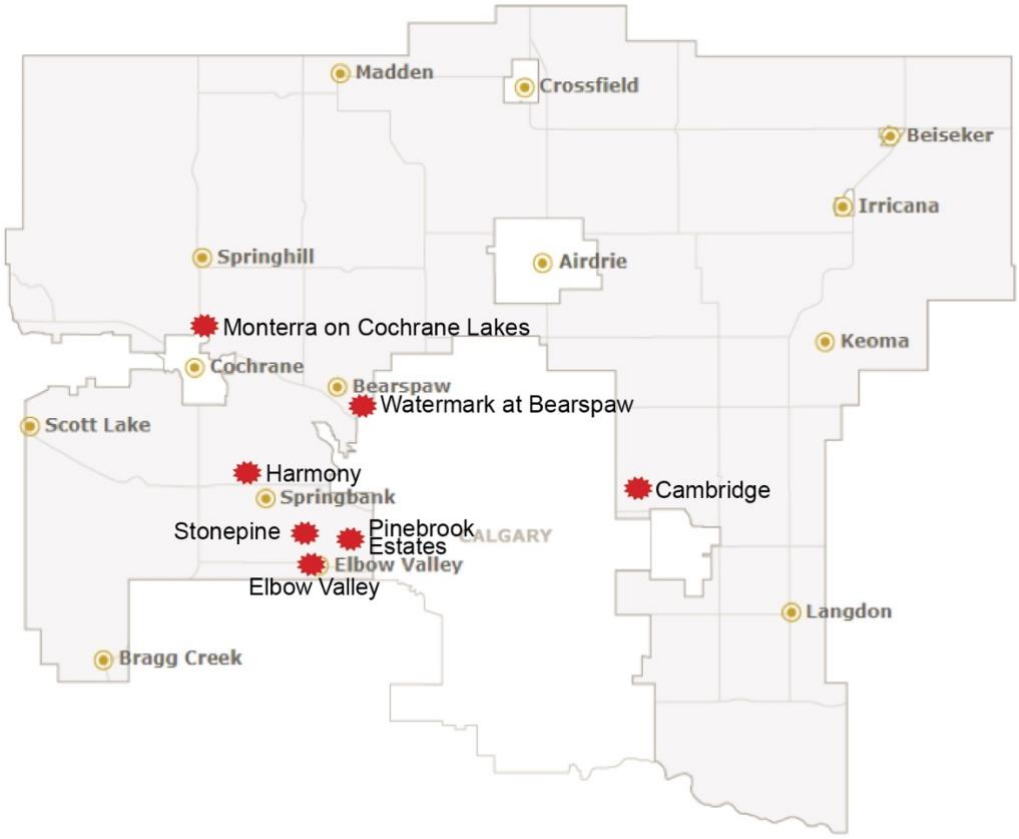


Figure 4: Rocky View Residential Development Locations

Objectives and actions required to meet the waste management goals previously defined are outlined in Appendix A, and presented in the supporting timeline (Appendix B). Some of these objectives represent changes to the current level of residential service. For example, it is recommended that RVC adjust its curbside collection service levels to be more consistent with accepted best practices (see Goal 6-G).

It is also recommended within the strategy to consider up to three additional transfer sites, and make updates to the Bragg Creek transfer site (see Goal 6-I,J). These proposed initiatives are outlined in the subsequent supporting actions, and will potentially enhance the level of service to RVC residents, for example by providing closer proximity to options like transfer sites.

3.2 Levels of Service – Industrial, Commercial and Institutional (ICI) and Construction and Demolition (C&D)

As RVC does not provide direct lines of service to ICI and C&D sectors (with the exception of transfer site use and agricultural roundups), the levels of service for these sectors are based on private contractor services. However, the proposal to create an ICI waste and recycling bylaw suggests the expectation that RVC businesses and organizations meet similar outcomes as those in neighboring municipalities (i.e., Calgary). Based on The City of Calgary's bylaw, this would mean businesses have adequate containers for the collection and storage of both recyclables and organic material, clear signage on collection containers, and yearly education to staff and/or tenants.

Recycling and organics program requirements for the ICI sector follow the materials collected in the residential sector. It would make sense for RVC to take a similar approach. Therefore, it is recommended that the standard ICI level of service include:

- Using modified RVC list of materials for transfer sites
  - Cardboard
  - Cell phones
  - Electronics
  - Florescent light bulbs
  - Glass
  - Grass & leaves (seasonal)
  - Metal
  - Newspaper
  - Paper (mixed)
  - Plastic film
  - Plastics (household)
- Using private contractors or accessing RVC transfer sites for diversion of additional materials
- Participating in RVC education programs
  - adhering to RVC branding and signage standards
  - providing education to staff and tenants
- Submitting waste disposal and diversion planning information and data as requested by RVC

Similarly, the C&D sector in RVC is serviced by the private sector, but can look to suggested levels of service to meet RVC goals. It is recommended that the standard C&D level of service initially focus on waste measurement and education by:

- Participating in RVC education programs, including the planned C&D resource guide
- Submitting waste disposal and diversion planning information and data as requested by RVC

3.3 Objectives, Actions and Timeline

Objectives and actions required to meet the waste management goals were developed based upon a review of the current Rocky View County waste management system and infrastructure. These proposed elements are presented in the planning timeline (Appendix B), and are detailed in more depth in this section.

Goal 1: Residential waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Goal 1 Performance Metrics

Waste Metric: Residential waste disposed per capita
note: metric listed per capita to allow evolution as RVC population changes

Operational Efficiency Metric: Curbside collection program yearly operating costs per household

Setting and applying waste management standards and measuring performance

A. **Work with developers, homeowners and other stakeholder groups to establish service standards and waste diversion targets that encourage 3Rs approaches for residential developments.**

Rocky View County is home to a number of residential developments that arrange for their own waste collection services. Understanding by these developments of the service standards outlined for RVC is important in establishing expectations that will result in progression toward County service harmonization.

As part of this process, RVC could require detailed information on how materials and waste will be managed to meet the specified service standards and diversion targets during operational phases of residential development prior to subdivision or development approval. This will encourage proactive planning on the part of developers to consider waste management in their development process.

B. **Develop and deliver a variety of programs and policy tools that benefit both rural and urban communities in managing their waste in accordance with the 3Rs hierarchy.**

Continued provision of programs that offer 3Rs opportunities to RVC residents will provide service options to progress toward this goal.

At a higher County level, it is also suggested to work with associated County departments focused on external functions, such as Planning, to encourage integration of effective waste management into broader County planning activities and residential development.

Consideration of waste management in County planning is a key element to advancing 3Rs options.

C. **Develop a standard process and framework for collecting and incorporating data from residential developments into the existing County system for tracking waste management practices and evaluating progress towards 3Rs waste management. (Also addressed in Goal 7)**

As residential developments manage the waste they generate, incorporating their data into the RVC waste measurement system is key to accurate and comprehensive tracking and reporting of waste in the County.

To accomplish reporting of waste from these sources, RVC should require all residential developments to report monthly tonnages of waste, recycling, organics, and other diversion programs to the County.

Groups like Homeowners Associations who are responsible for waste services will need assistance in making this happen through reporting guidelines, templates and other tools to facilitate their participation.

D. **Where appropriate, support residential developments, home owners associations, and individuals in making arrangements for waste diversion services.**

Residential developments will be looking for guidance on expected and appropriate service levels for their residents. Sharing established RVC service levels will assist residential developments in establishing services for their residents, and will also help to work toward increase service harmonization across the County.

It is likely that RVC may be asked to play an increased role, not only in defining service levels, but also in coordinating service provision. Assistance with functions such as writing service contracts could assist residential developments, while also facilitating harmonization. This is a role that RVC needs to consider going forward.

Communications / Education

E. Increase the level of awareness in the County about waste management programs, issues and the need to adopt the 3Rs hierarchy of reducing, reusing, and recycling waste.

Promotion and education are key elements of any successful waste management and diversion program. The level of awareness and participation in diversion, in particular, dictate its ultimate success more than technical aspects. The County has a descriptive website that provides valuable information to residents. This could be expanded to encompass additional social media options, such as a dedicated app with waste management information, as well as tips and reminders.

F. Apply Community-Based Social Marketing principles when introducing, advertising, or educating on new or existing waste management and diversion programs.

Community-based social marketing is an approach to program education and promotions that encourages high rates of effective participation. The community-based social marketing process centres on uncovering barriers that inhibit individuals from engaging in sustainable behaviours, focusing on tools that have been demonstrated to be effective in fostering and maintaining behaviour change.

The effectiveness of individual programming options is highly dependent upon successful social marketing techniques. However, it is important to recognize that diversion results from the program option itself, rather than from social marketing. This technique should be incorporated into any program that requires behaviour change and is assumed as an overarching approach within all the suggested strategy elements.

A key piece of education and promotions in waste diversion programs is effective messaging and signage. Ideally, marketing should include an overall brand and look that provides continuity to the entire program, while also being consistent with the community culture. For example, the County's logo and examples of Transfer Site branded signage are represented below (Figure 5 and Figure 6):

ROCKY VIEW COUNTY

Figure 5: RVC Branded Signage at Irricana Transfer Site

Figure 6: RVC Branded Signage at Langdon Transfer Site

Linking the look and feel of the County's overall branding to messaging for the waste reduction / diversion program provides identity and continuity. This is already incorporated into current signage and may be as simple as commissioning the same designer that developed the County's logo to develop enhanced diversion signage, especially for Chuck Wagons.

Clarity and consistency of signage is also critical to its effectiveness. Effective recycling signage combines clear language with visuals. Words are not adequate – inclusion of photos is critical to effectively convey the message of what materials are or are not acceptable. Examples of effective signage are shown in Figure 7 and Figure 8.

It is also important to maintain signage and bins in good condition. Users will tend to treat infrastructure with greater respect if it is well maintained.

Figure 7: Effective Signage Combining Clear Words With Photos

(Source: Town of Banff)

Figure 8: Further Examples of Effective Container Signage

(Source: CleanRiver 2017)

These promotion and education elements should be supported through the following actions:

- Building consistent branding and signage throughout the system.
  - Ideally, signage should be consistent at all sites (Chuck Wagons and transfer sites), based on the quality seen at transfer sites.
  - Generally, bin signage at Chuck Wagons could be improved to include pictures as well as words to clearly differentiate acceptable materials. In some cases (specifically glass and beverage containers), signage was limited to hand-written instructions printed on cardboard. In addition, not all sites were observed to have road signs to direct residents to the Chuck Wagon.
  - Specifically, improving instructional signage at Scott Lake Transfer Site and Crossfield Transfer Site.
- Implementing a Community-Based Social Marketing program should also include elements directed at improving proper participation in the Langdon curbside collection program.

Goal 2: Industrial, Commercial and Institutional (ICI) waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Goal 2 Performance Metrics

Waste Metric: ICI waste disposed per capita

Setting and applying waste management standards and measuring performance

A. Work with businesses, business associations, developers and the like to establish waste management standards and waste diversion targets for ICI sectors.

In working towards its goal for ICI waste produced in Rocky View County to be managed in accordance with the 3Rs Hierarchy, RVC will need to establish waste management standards and waste diversion targets for ICI sectors, in addition to promoting ICI waste diversion practices.

B. Develop programs and policy tools that support recycling and organics diversion in the ICI sector to meet the waste management standards.

As with residential, the ICI sector also requires service options to move towards 3Rs waste management practices. RVC has the opportunity to provide options such as accessing transfer sites. However, many programming options will be provided through private sector service providers, with RVC playing a facilitation role.

As part of the approval process, ICI developments could be required to submit a waste management plan that outlines how waste will be managed according to the RVC waste management standards.

As with residential developments, encouraging ICI developers to consider waste management as part of the development process would result in more proactive 3Rs planning in this sector.

C. Introduce a Business Waste Diversion Education program to assist businesses to embrace 3Rs initiatives.

Education is a key element to encouraging diversion activities in the ICI sector. It is suggested to partner with The City of Calgary to use their online tools and resources that are available for businesses to start diversion programs. The City offers:

- Signage in several languages
- Recycling program letter
- Food and yard waste program letter
- Business and Organization Recycling Guide for Building Owners and Managers
- Food and Yard Waste Diversion Guide for Businesses and Organizations
- Do it yourself waste audit kits
- Tip sheets
- Case studies

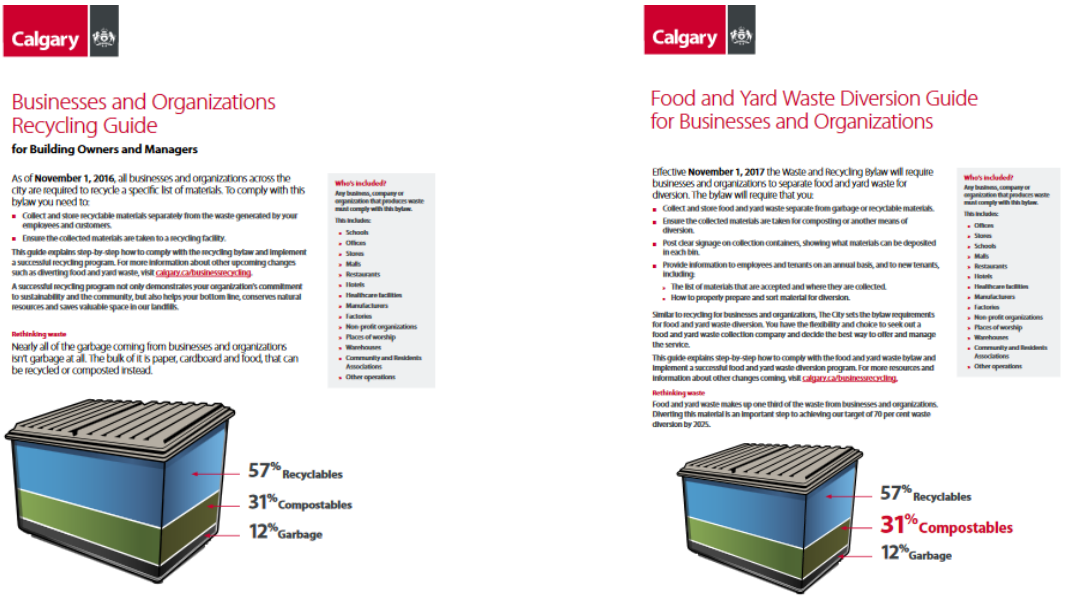


Figure 9: City of Calgary Recycling and Organics Diversion Guides for the ICI Sector

If RVC would like to look to similar programs in other jurisdictions that could potentially be adapted, the City of Seattle operates the Green Your Business (formerly The Resource Venture) program that promotes waste prevention and green procurement in businesses and provides free information and technical assistance to improve environmental performance of their operations. The Green Your Business Program provides technical assistance, conducts recycling and composting program site visits to businesses and food service business visits to support compostable food packaging implementation.

A variety of publications are available online which include an education guide book called Seattle Business Recycling Guide: 6 Steps to Saving Money and Reducing Waste and other resources.

Green Your Business also features prominently in Seattle's commercial food waste diversion program by providing information and assistance to businesses to start up a commercial food waste diversion program.

Figure 10 Seattle Public Works Restaurant Dinner Area Posters (Standard Set) for Recycling, Food & Compostables, and Garbage

Figure 11: Seattle Public Works Round Bin Labels

D. Consider creating a RVC waste and recycling bylaw for the ICI sector to support the waste management standards.

Building on Calgary's experience, RVC could consider implementing similar bylaws to Calgary's ICI Waste & Recycling Bylaw in the event that direct ICI education does not result in the desired adoption of diversion programs by this sector. Calgary's ICI Waste & Recycling Bylaw requires all businesses and organizations in the city to have adequate containers for the collection and storage of both recycling and organic material. The Bylaw also requires clear signage on collection containers and yearly education to staff and/or tenants.

E. Develop a standard process and framework for collecting and incorporating data from the ICI sector into the existing County system for tracking waste management practices and evaluating progress towards Goal 2.

Tracking ICI waste data will be challenging, as it is managed by private sector service providers, who see this information as proprietary. However, it may be possible to work directly with larger ICI generators willing to share their information. This will need to be developed in a staged process to build the system.

F. Form alliances with business associations to support 3Rs activities in the County.

Business associations like Chambers of Commerce can be valuable partners in building a progressive diversion culture in the RVC commercial community.

G. Integrate waste management into broader County planning activities.

It is recommended the RVC Utility Services department work with associated County departments focused on internal functions, such as Corporate Properties and Customer Care, to encourage integration of effective waste management into internal County activities and programs.

Additionally, the Utility should work with associated County departments focused on external functions, such as Planning & Development, to encourage integration of effective waste management into broader County activities and development.

Consideration of waste management in County planning functions, both internal and external, is a key element to advancing 3Rs options.

H. **Support agricultural operators within the County with waste and recycling services and programs specific to ag industry needs.**

RVC will need to monitor the current agricultural plastics program at Irricana and assess whether it makes sense to apply for additional collection sites if the program becomes permanent.

The Alberta Ag-Plastic, Recycle It! program is a three-year (2019–2022), government funded pilot project that helps farmers recycle used grain bags and twine. The Irricana Transfer Site was approved as one of the pilot collection sites for grain bags and twine, and all ag plastics from the County and some neighbouring areas are handled at this site. During this pilot phase, RVC should monitor its involvement and desire for expansion.

I. **Encourage waste reduction at special events in the County, and facilitate by providing education and service options.**

Special events provide an option for direct waste diversion, as well as an opportunity for education of RVC residents. Many examples of best practices at special events, such as Calgary and Edmonton Folk festivals, offer options to build on existing programs. Developing a standard of service (building on best practices) for special events in RVC would provide a foundation for this objective.

Goal 3: Construction and demolition (C&D) waste produced from new developments and/or renovations will be minimized and resource reuse maximized.

Goal 3 Performance Metrics

Waste Metric: C&D waste disposed per capita

Data Sources: C&D developers; haulers

Setting and applying waste management standards and measuring performance

A. **Establish waste diversion standards and targets for the C&D sector.**

B. **Develop programs and policy tools that support recycling and organics diversion in the C&D sector to meet the waste management standards.**

C. **Develop a resource guide for C&D reduction/recycling in RVC and region.**

Several C&D recyclers exist in RVC and neighbouring municipalities. Therefore, diversion options for common C&D materials such as drywall, wood, and metal are readily available. Actions planned that build

on the objective to establish waste management standards and targets for the C&D sector include developing a resource guide for C&D reduction / recycling in RVC and region.

D. Track and evaluate C&D waste

Similar to the ICI sector, tracking ICI waste data can be challenging, as it is managed by private sector service providers. However, working with some of the major C&D developers may have potential for establishment of C&D waste tracking foundation that can be expanded.

E. Consider requiring all new build developments to submit a waste management plan that outlines how waste will be managed according to the RVC 3Rs hierarchy C&D standards.

This can build on the success of programs like that operated by the City of Port Moody (part of Metro Vancouver) that has implemented a mandatory Waste Management Plan requirement before receiving a new construction or demolition permit (Waste Management Bylaw No.2822).

Applicants must submit a Waste Management Plan along with a partially refundable waste management fee based on the size of the project prior to receiving a permit. In order to receive the maximum refundable amount of the waste management fee at least 70% of C&D debris must be recycled or reused, otherwise, a sliding-scale is used to determine the refund amount based in the percent diverted. A Compliance Report must be submitted to a Building Official along with receipts from recycling facilities and landfills showing the amount and type of material recycled or disposed. The Compliance Report must be submitted within 90 days of completing the project for a refund.

Renovation projects over a certain size could also be required to adhere to RVC C&D renovation standards.

Goal 4: Rocky View County will be seen as a preferred location for markets and industries that consume recyclables and/or actively minimize waste.

Goal 4 Performance Metrics

Overall Metric: Number of diversion-focused facilities residing in RVC

3Rs Market development and industry attraction

A. Maximize the efficiency and success of solid waste and recycling programs by engaging in public and private partnership opportunities for solid waste and/or recycling when it is beneficial to do so.

Partnerships offer the potential to share resources and connections, particularly with the key role that the private sector plays in waste management in RVC. Advancing this approach as programs evolve and expand can provide efficiency while fostering the role of the private sector within RVC.

B. Consider 3Rs incentives.

Direct mechanisms like incentives can encourage specific development options in areas related to the 3Rs. This also sends the message that RVC encourages business that has a foundation of waste reduction, reuse and recycling. Potential options include preferential business license fees, waste

reduction-focused grants, or fast-tracking business approvals for 3Rs companies. With intentional policy development, RVC could become a location of choice for these businesses. An example of this type of development that has already located in RVC is Enterra Corporation, who farm black soldier fly larvae for animal feed using pre-consumer waste food.

C. **Host Circular Economy sessions for specific industries of interest.**

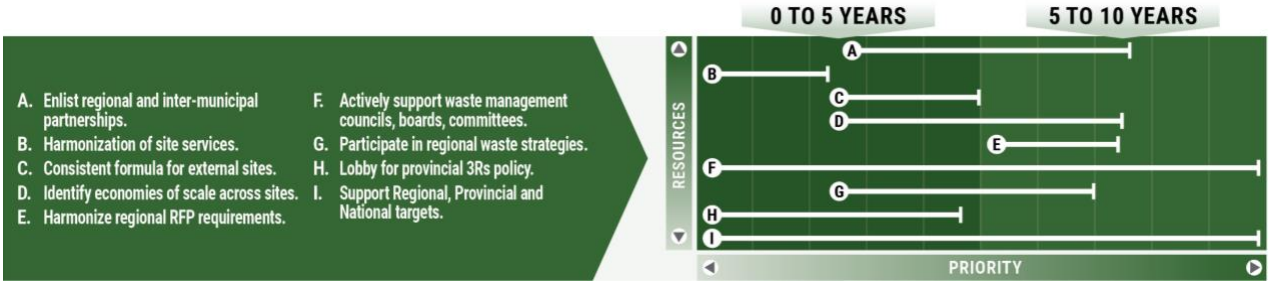
Education initiatives like workshops and webinars are proactive approaches RVC can use to encourage 3Rs activities and investment. These approaches could potentially be developed in collaboration with regional partners like The City of Calgary and surrounding municipalities.

D. **Support and promote markets and industries that utilize recyclables and/or actively minimize waste.**

E. **Develop collaborative approaches with land-use bylaw to support 3Rs market development in the County.**

One area of potential focus for market development is the challenges the Calgary region has experienced with management of organic waste, with some facilities experiencing closures, and a general shortage of processing capacity. Balancing expectations of residential areas with the realities of organics processing sites presents a challenge to the region. RVC has the choice to proactively set up a processing facility or encourage and facilitate the private sector to establish additional capacity. As part of the timeline planning objective to develop collaborative approaches with land-use bylaw to support 3Rs market development in the County, RVC could incorporate Alberta's current Code of Practice for Compost Facilities into its planning processes by requiring operators to adhere to the Code of Practice for any composting operations. Close communication with AEP regarding any potential facilities will also serve to avoid potential issues.

Goal 5: Rocky View County influences and leverages regional, provincial and national opportunities to advance 3Rs policies and programs.



Goal 5 Performance Metrics

Overall Metric: Percentage of RVC-region sites consistent with the transfer site standard level of service

Regional servicing and economies of scale

It is recommended that RVC continue to expand its work with its regional partners to jointly investigate opportunities to harmonize and partner with other communities in the region.

A. **In accordance with levels of service standards and cost of service, enlist regional and intermunicipal partnerships for the delivery of solid waste management services to improve convenient access, economies of scale, or other program efficiencies if economically and politically feasible and desirable.**

The Funding Model exercise (Section 2.6) led to the following recommendation:

Review intermunicipal agreements with the Towns of Redwood Meadows and Irricana and adjust accordingly to capture the full costs of service where feasible (i.e., including all appropriate Department Administration and Corporate Overhead costs).

B. **Work towards harmonization of services between sites.**

Neighbouring municipal Transfer Sites and Recycling Depots provide service coverage through inter-municipal agreements with RVC. However, sites have unique agreements and provide different levels of service. The important service offered through these partnerships is combined with a desire to have more harmonized service in the region.

C. **Develop a consistent contract and cost-sharing formula for external sites that RVC residents use.**

RVC has initiated a process to set fixed costs for all contracts with neighbouring partner sites. This process is an important step and should continue in an effort to develop consistency between sites.

D. **Identify opportunities for regional efficiency by taking advantage of economies of scale across RVC's multiple sites and neighbouring sites with partnership agreements, including consideration of bulk purchases of equipment, developing common contract terms for outsourced arrangements, and leveraging the scale of multiple sites in the region to exercise buyer power during outsourcing arrangement contract negotiations.**

E. **Work together with regional partners to develop less prescription in RFPs; defining outcomes rather than methods.**

Intergovernmental influence and participation

F. **Actively support and participate on regional, provincial, and intermunicipal waste management councils, boards, committees.**

G. **Participate in the development of regional waste strategies, such as the the Calgary Metropolitan Regional Boards' servicing strategies.**

H. **Join other municipalities in lobbying for the adoption of provincial policy supporting 3Rs hierarchy and circular economy.**

Now that Alberta is moving forward on EPR for packaging and printed paper, it is important for RVC to consider the implications of EPR on its programming. Since EPR leads to consistent programs across the province for jurisdictions that sign on, it is likely that there will be expectations for levels of service under provincial EPR. Looking to BC's list of materials covered by Extended Producer Responsibility (EPR) gives insight into materials likely to be captured in the future in Alberta. BC's collection system for packaging and paper products is also a good guideline to use in choosing collection rules for these materials in RVC. For example, source separation is encouraged in BC to maintain material quality.

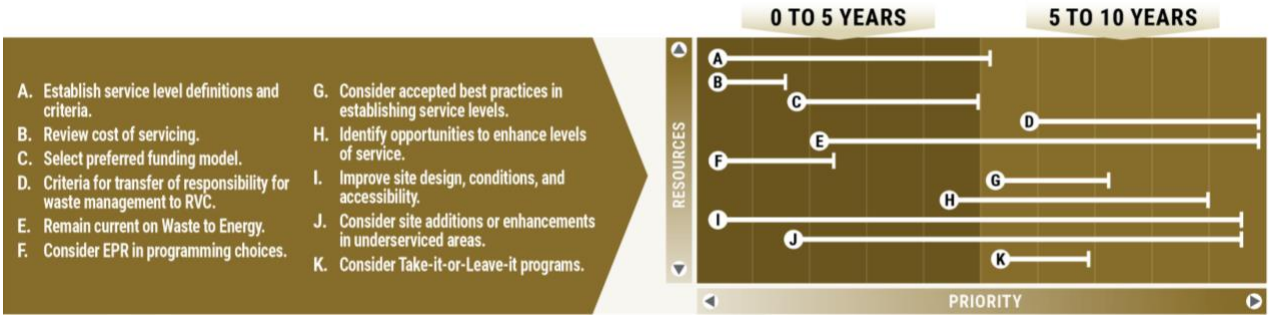
Potential future EPR regulations should also be considered in the development of RVC diversion programming. Canada Action Plan (CAP) EPR provides a list of recommended EPR program materials that would seem to be a logical progression to consider for addition to RVC programming. Since future EPR program details are unknown, looking to existing EPR programs, such as those in BC, can give some insight into the likely operational characteristics of future Alberta EPR programs.

Until EPR details are announced, RVC should consider joining the municipal EPR lobby efforts to urge the provincial government to meet its CAP EPR obligations by moving to implement EPR regulations for materials such as packaging and printed products, and HHW. The potential benefits of EPR, including

funding support and stronger marketing, offer positive outcomes for municipalities like RVC. RVC should also participate in future engagement opportunities offered by Alberta Environment and Parks.

I. **Honour and support regional, provincial and national waste management targets.**

Goal 6: Rocky View County establishes appropriate levels of service that ensure efficient waste management and diversion options are accessible to County residents.



Goal 6 Performance Metrics

Overall Metric: Percentage of households within 15 km of waste management service sites

Operational Efficiency Metric: Cost of service (on a per-tonne basis) for different levels of waste management service in RVC

Setting and applying waste management levels of service

A. **Establish definitions for waste management service levels that will assist in encouraging harmonization of recycling options between equivalent programs.**

This is related to the levels of service for different sectors discussed in Goals 1 through 3. This more detailed level of service may address factors such as:

- Hours of operation that meet service demands
- Standards for distance to sites

B. **Review cost of servicing for different levels of service for waste management in RVC.**

A cost of service review showed that the 2019 user fee revenues, as directly billed to Langdon Curbside Collection customers (Table 1), is currently achieving cost recovery. However, as shown in Table 2, when compared against its total cost of service of $729,000, it is only recovering approximately 77% (which represents a total potential subsidization of approximately $169,365). There may be an opportunity to evaluate increasing the monthly billing fees to the Langdon Curbside Collection customers to at least recover the indirect administration costs incurred.

Table 1: Langdon Curbside Collection Services Costs Per Unit (2019)

Per Unit Metric	Black Cart	Blue Cart	Green Cart	Summary Across 3 Cart Types
Monthly Cost per Customer	$13.87	$12.68	$7.53	$34.09
Cost per Scheduled Collection	$3.20	$2.93	$2.31	$2.85*
Cost per Tonne	$410.22	$773.32	$253.08	$426.18**

**based on total costs divided by total number of scheduled collections across 3 Cart types*
***based on total costs divided total tonnes collection across 3 Cart types*

Table 2: Cost Recovery per Solid Waste and Recycling Service (2019)

Community	Solid Waste & Recycling Service	2019 Total Cost of Service	2019 Revenues	Cost Recovery Analysis
Langdon	Curbside Black Cart	$729,000	$232,478	76.8%
	Curbside Blue Cart		$194,856	
	Curbside Green Cart		$132,303	
Langdon	Transfer Site & Recycling Depot	$285,757	$68,667	24.0%
Bragg Creek	Transfer Site & Recycling Depot	$447,868	$146,164	32.6%
Irricana	Transfer Site & Recycling Depot	$221,574	$62,302	28.1%
Springbank	Recycling Depot	$173,120	-	0%
Airdrie	Transfer Site, Recycling Depot	$101,208	$4,760	4.7%
Cochrane	Eco Centre	$136,460	-	0%
Crossfield	Transfer Site & Recycling Depot	$29,329	-	0%
Beiseker	Transfer Site & Recycling Depot	$10,998	-	0%
Scott Lake	Transfer Site	$7,332	-	0%
Madden	Chuck Wagon	$96,921	$3,851	4.0%
Bearspaw	Chuck Wagon	$56,807	$775	1.4%
Keoma	Chuck Wagon	$79,437	$4,965	6.3%
Elbow Valley	Chuck Wagon	$77,263	$4,957	6.4%
Springhill	Chuck Wagon	$108,032	$17,726	16.4%
All	Agriculture Round-ups	$77,803	-	0%
	Totals	**$2,638,912**	**$873,805**	**33.1%**

Table 3: Per Unit Service Level Costs (Self-haul) (2019)

Collection Site	Cost per user/month ($)	Cost per tonne ($)	Cost per RVC HH within 15 km per month ($)
Langdon	2.78	580	8.50
Bragg Creek	1.79	440	39.00
Irricana	7.87	755	36.00
Springbank	N/A	720	2.50
Airdrie	3.89	360	5.60
Cochrane	N/A	480	2.80
Crossfield	1.29	54	4.30
Beiseker	3.33	N/A	3.00
Scott Lake	N/A	N/A	1.80

As shown in Table 3, from the perspective of usage (i.e., cost per customer and cost per tonne) across all RVC-owned and operated Transfer Sites, Bragg Creek featured the lowest cost per tonne and cost per user, which demonstrates that the volumes of customers and materials received likely drive its higher servicing demand metrics. At the same time, Irricana showed significantly higher cost than either Langdon or Bragg Creek transfer sites. A review of the level of investment required to operate and maintain this service relative to local demand requirements is recommended to assess potential efficiency improvements.

Additional details of the cost of service review can be found in Section 3.5.

C. Select a preferred funding model for solid waste services and establish a policy and plan to transition to this preferred model.

Building on the Cost of Service analysis, a Funding Model review led to the following recommendations to be undertaken as part of this objective:

- Based on the principle that Curbside Collection Service customers should ideally pay for their full cost of service relative to rate stability constraints, it is recommended to target for an increase in utility user fees for Langdon Curbside Collection customers to ensure that direct O&M, cart replacement contributions, and allocated Department Administration costs are funded from the rates. Based on 2019 figures, this will require an increase from current rates of approximately 15%. However, this will reduce annual reliance on property taxes by approximately $90,000.
  - To mitigate the one-time impact of these rate increases to Langdon customers, RVC may choose to implement this change over 2-4 years, pending its discretion re: desire to minimize any year-over-year rate impacts.

- Recognizing a balance between available level of service, public good, encouraging waste diversion and financial sustainabilty, it is suggested to introduce utility user fees to residential households across Rocky View County of approximately $5 - $6 per month to fund direct O&M costs associated with self-haul Services. This amount is an average based on the cost-of-service review results reflected in Table 3. It is estimated that this can reduce Solid Waste and Recycling Services' annual reliance on property taxes by approximately $900,000 - $1,000,000 (about 1/3 of RVC's Solid Waste and Recycling Services total cost of service).
  - It is recommended this change be performed by a one-time adjustment rather than a prolonged, phased-in approach.

- Evaluate the preferred method and impact to Finance of implementing and administering the utility fee mechanism for self-haul services. For RVC households who now receive a monthly utility bill, it would be reasonable to adjust this bill to incorporate this new utility line item. However, a reasonable solution may be required for residents who do not currently receive a monthly utility bill. Potential solutions could include:
  - Introducing a new bill per residential household to ensure each household is managed by the same process.
  - Incorporating the equivalent annual amount as required by the monthly utility fee as a separate, fixed line item on all RVC residential tax bills; and / or
  - Introduce online utility account payments for all RVC-provided utility services.

- Continue to leverage existing usage-based fees for garbage tag-a-bag and specific disposal items to incent waste diversion performance.

Funding model options and recommendations are discussed in further detail in Section 3.6.

D. Determine a set of criteria for when the responsibility for waste management services should/might transfer to RVC.

As discussed in Goal 1, it is likely that RVC may be asked to play an increased role, not only in defining service levels, but also in coordinating service provision. This may develop into a more formal role for RVC in delivering waste management services for an increased portion of the RVC population, but should be based on a recognized set of criteria that would trigger this level of involvement. For example, as shown in Figure 1, the standard of service for areas with population density greater than 400 people/km^2 is curbside collection, and this would reasonably be administered by RVC as it is in Langdon.

E. Remain current on Waste to Energy options and their costs.

Staying current on evolving waste management options will allow RVC to consider innovative programs and technologies.

F. Consider likely EPR program elements in RVC programming choices.

As previously mentioned, looking to existing EPR programs, such as those in BC, can give some insight into the likely operational characteristics of future Alberta EPR programs. Since EPR programs are associated with producer funding, choosing materials most likely to be included in future EPR programs may be operationally expedient.

G. Consider accepted best practices in establishing service levels.

Consideration of best practices will encourage programs to be efficient and effective. For example, adjust curbside collection service levels to be more consistent with accepted best practices. This currently applies to the Hamlet of Langdon, that has a curbside collection program for garbage, recyclables and organics provided by the County through a collection contract with a private service provider. The current program provides weekly collection of all streams in summer, with every other week collection of organics in winter months. Cart options include 120-litres or 240-litres for garbage (with corresponding differential fees), while both recyclables and organics are collected in 240-litre carts.

Specifically, with a 3-stream curbside collection system, the following collection schedule is considered best practice:

Garbage – every other week (as a result of organics collection)

Recyclables – every other week (accommodated through 240-litre cart size)

Organics – weekly in summer; every other week in winter

Adjusting to this schedule brings cost saving opportunities associated with reduced collection frequency. However, as residents are currently used to weekly collection of both garbage and recyclables, it is advised to initiate the change first through a pilot to demonstrate the feasibility of reduced collection. This will serve to reduce the potential resistance to what could be perceived as a service reduction.

This service change will result in a reduction in annual curbside collection costs. From review of the current curbside collections contract with the present waste hauler[1], the costs per residential account per month charged to RVC by the hauler will change as follows:

- Garbage (Black) Cart: From $4.71 per Residential Account per Month to $3.29
- Recyclables (Blue) Cart: From $4.29 per Residential Account per Month to $3.00

Based on this change to Black (Garbage) Cart collection frequencies, RVC would save $1.42 per residential account per month vs. its current costs as charged to RVC by the hauler. Based on the estimated 2019 average number of curbside collection accounts of 1,789, this would equate to an approximate annual savings of $30,485 in direct operating costs.

In addition to this change to Blue (Recyclables) Cart collection frequencies, RVC would save $1.29 per residential account per month vs. its current costs as charged to RVC by the hauler. This would equate to an approximate annual savings of $27,694 in direct operating costs.

Combined, these changes will represent an approximate $58,000 savings in direct operating costs, which results from a 30% cost savings on both blue and black cart collection, representing just under 10% of direct curbside program costs.

Rural-Based Programs

Rocky View County residents have access to nine transfer sites and recycling depots. RVC owns and operates 3 full-service Transfer Sites and has inter-municipal agreements with 5 neighbouring municipalities, allowing RVC residents to use their Transfer Sites or Recycling Centres. In addition, RVC has an agreement with a home builder to use their site as a Recycling Depot (Springbank).

Rural RVC residents also have access to Chuck Wagons, that are mobile small-scale recycling and transfer sites that currently operate weekly, rotating between fixed locations on specific days and times.

H. Evaluate and improve on the established levels of service at current self-haul sites.

It is recommended RVC regularly review the list of accepted materials at collection sites to ensure programs remain current. As many RVC residents rely on transfer sites for their waste management services, it is important that these sites remain current and consistent in terms of the level of service provided. Regular reviews of level of service, including accepted materials, to identify and implement opportunities to enhance the types of services provided at transfer sites (and Chuck Wagons) will serve to keep these sites current.

RVC should conduct a review of transfer site use at different times of year and consider optimizing operating hours based on seasonal demand (e.g., shorter winter operating hours) if warranted at specific locations (i.e., Irricana and Langdon). This recommendation arose from site reports that an estimated 100 customers visit the Langdon transfer site on Saturdays during the summer, while Wednesdays during the winter see few customers from 5:00 pm to 7:00 pm.

[1] Rocky View County, “Solid Waste Services Agreement between Rocky View County and Collective Waste Solutions Inc.”, February 14, 2020

Additionally, a further analysis of facility service population based on drive times in addition to distance to the facility should be conducted.

Based on the full costs of service for the Bragg Creek and Irricana Transfer Sites and Recycling Depots, it may also be worthwhile to review the funding split achieved with the Town of Redwood Meadows and Irricana (respectively). It may be appropriate to also consider the inclusion of indirect administration and corporate overhead allocation costs as part of this funding model (see Section 3.6).

I. **As required, improve site design, conditions and accessibility.**

It is recommended RVC incorporate cashless payment method options wherever possible. Additionally, a site design review of the Bragg Creek Transfer Site should be completed to consider options for redesign to improve efficiency and reduce traffic congestion.

Table 4: RVC Transfer Site Users and Material Amounts (2019)

Transfer Site	# of Users	Garbage (tonnes)	Recyclables (tonnes)	Organics – Yard Waste (tonnes)	Ag Recyclables (tonnes)
Bragg Creek	20,000*	681	221	108	2.5
Irricana	3,339	206	87	5	10
Langdon	8,592	306	124	53	2.3*

*estimated from partial data

As shown in Table 5, the Bragg Creek Transfer Site sees the largest traffic volume of all RVC transfer sites, with more than 250 customers a day (reported up to 330 recently). Reports of service challenges associated with this volume of users suggests 250 customers per day is the upper limit of customers who can reasonably be handled at a site like Bragg Creek. This compares to Irricana and Langdon, where 150 customers/day is an estimated threshold for maximum usage, based on current layout and infrastructure.

The large volume of traffic at the Bragg Creek site presents space and traffic flow issues, as reported by the site operator. This is reflected in lineups and significant wait times to enter the site, and some customers being turned away at the end of the day. There are limited options to expand the site, as the site is located adjacent to a former landfill.

Based on the size constraints and very strong usage at this site, operational options need to be considered to relieve site congestion issues and associated customer service and potential safety issues. A site design review would consider options for redesign to improve efficiency and reduce traffic congestion, including:

- Options to relocate the kiosk (e.g., closer to the site entrance for better visibility), as well as potential locations for a compactor bin for plastics.
- Consider adding a satellite location for certain materials to reduce the burden on the site.
- Review options to add an additional transfer site operating day at Bragg Creek, based on exceeding the 250 customers/ day threshold.

Presently, the Bragg Creek Transfer Site operates only 2 days per week (16 total hours per week). An extra day would establish a 3-day week for the Bragg Creek site (which is equivalent to a 50% increase in operating availability per week), thus enabling local customers more options to visit and reducing the peak number of customers each day.

From review of the 2019 financial results and 2021 budget for the various direct operating costs at the Bragg Creek Transfer Site, the following table was developed to calculate the estimated annual impact to direct operating costs. It is assumed that the total customers and tonnes of materials would not change based on this increased availability.

Table 5: Estimated Annual Impact to Bragg Creek Operating Costs from Increasing Number of Operating Days per Week from 2 to 3

Item	Estimate	Comment
Total 2019 Direct Operating Costs	$293,065	from 2019 financial results
Percentage Site Mgmt Costs	37.7%	from 2021 detailed budget
Total 2019 Bragg Creek Site Mgmt Costs	$110,591	Assume all other costs remain fixed
Number of Current Operating Days/Week	2	
% Increase in Site Mgmt Costs Required	50.0%	Move from 3 to 4 days per week
Increase in Operating Costs per Year	**$55,295**	**Estimated annual increase in OPEX**

From this analysis, it is calculated that it would be required to fund an additional $55,295 in direct operating costs per year to increase the number of Bragg Creek Transfer Site operating days from 2 to 3. There could be operational challenges, such as scheduling full bins for servicing, when more operating days are added per week. These risks would need to be fully considered before changes are adopted.

J. Consider site additions or enhancements in underserviced areas

Table 6 shows the number of households within 15 km of collection facilities (proximity standard defined in level of service) available to RVC residents, while Figure 12 shows the resulting catchment areas. It can be seen that most areas in RVC meet the proximity standard, while the number of households within the catchment area of specific sites varies considerably.

Table 6: Number of RVC Households within 15km of Facilities

Facility	#RVC Households within 15km
Langdon Transfer Site & Recycling Depot	2,800
Bragg Creek Transfer Site & Recycling Depot	964
Irricana Transfer Site & Recycling Depot	516
Springbank Recycling Depot	5,724
Airdrie Transfer Site (TS) & Recycling Depot (RD)	1,498
Cochrane Eco Centre	4,097
Crossfield Transfer Site & Recycling Depot	569
Beiseker Transfer Site & Recycling Depot	310
Scott Lake Transfer Site	334
Bearspaw Chuck Wagon	5,347
Elbow Valley Chuck Wagon	4,087
Keoma Chuck Wagon	758
Madden Chuck Wagon	570
Springhill Chuck Wagon	2,077

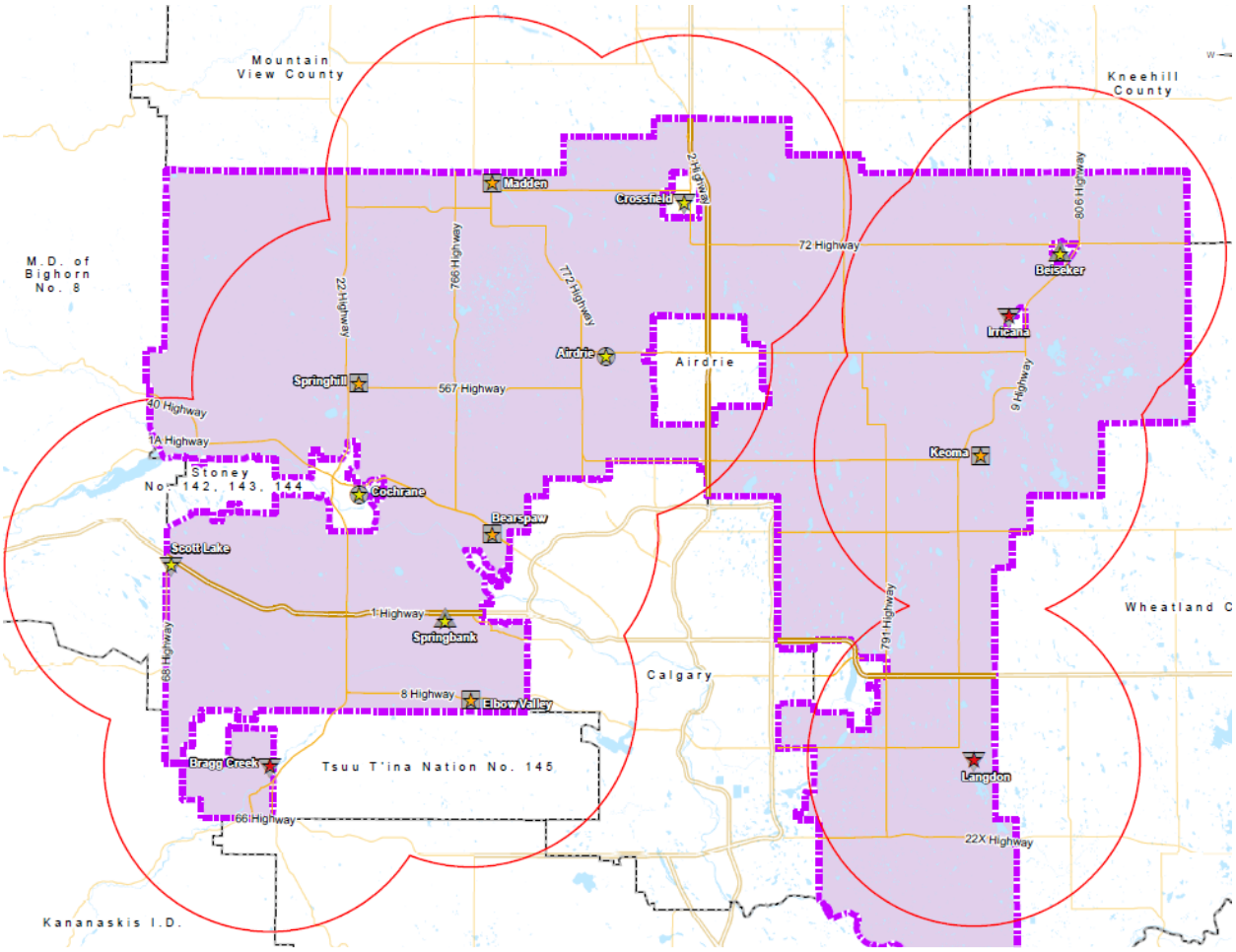


Figure 12: Catchment Areas within 15 km of Collection Facilities

Collected data indicates Springbank receives a considerable amount of material, suggesting it may be warranted to become a full-service site. In addition, providing an attendant would help to educate users and control contamination, while also offering the option to accept garbage for a fee. It is therefore recommended that consideration be given to enhancing the Springbank Recycling Depot to become a full-service transfer site, with attendant and user-pay garbage option.

From review of the 2019 financial results and 2021 budget for the various direct operating costs at the Springbank Recycling Depot and all full-service Transfer Sites, the following table was developed to calculate the estimated annual impact to direct operating costs.

Table 7: Estimated Capital and Operating Cost Implications to Replace Springbank Recycling Depot with Full-Service Transfer Site

Item	Estimate	Comment
Capital Investments:		
Site Development Costs	$1,067,690	Per capital development estimates in Appendix C
Equipment	$335,800	Per capital development estimates in Appendix C
Less Replacement Value of Existing Springbank Depot Assets	($165,500)	assume can re-use in new Transfer Site
Land Acquisition	$30,000	assume $6,000 per acre and 5 acres required
Total Capital Estimate:	**$1,267,990**	
Capital Useful Life (years):	20	
Cost of Debt:	2.2%	assume completely debt financed over 20-years
Annual Debt Servicing Requirements:	**$79,051**	average annual debt payment over 20 years
Operating Cost Implications:		
Reduction of OPEX from removal of Springbank Recycling Depot	($118,054)	per 2019 cost of service direct costs
Addition of Full-Service Transfer Site OPEX	$200,734	avg of 2019 full-service Transfer Sites
Adjustment to Direct Operating Costs	**$82,680**	estimated avg. annual 2019 costs
Total Annualized Cash Flow Impact	**$161,730**	annual operating costs + debt servicing

From this analysis, it is calculated that it would be required to fund an upfront capital investment of approximately $1,267,990 (assuming existing tangible capital assets at the Springbank Recycling Depot can be salvaged and re-used at the new site). If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $79,051. This, plus estimated incremental operating costs of approximately $82,680, would result in a total annual cash flow requirement of approximately $161,730.

A remaining area of potential service gap, based on proximity of 15 km to a collection site, is NE of Calgary (north of Hwy 1, south of Keoma), as shown in Figure 12. An inter-municipal agreement with the City of Chestermere or establishing an agricultural roundup / Chuck Wagon location near Chestermere would also serve to at least partially address the east service gap.

From review of the 2019 financial results and 2021 budget for the various direct operating costs for all full-service Transfer Sites, the following table was developed to calculate the estimated annual impact to direct operating costs of developing an additional transfer site in the East.

Table 8: Estimated Capital and Operating Cost Implications to Establish a new Full-Service Transfer Site in East Side of RVC

Item	Estimate	Comment
Capital Investments:		
Site Development Costs	$1,067,690	Per capital development estimates in Appendix C
Equipment	$335,800	Per capital development estimates in Appendix C
Land Acquisition	$30,000	assume $6,000 per acre and 5 acres required
Total Capital Estimate:	**$1,433,490**	
Capital Useful Life (years):	20	
Cost of Debt:	2.2%	assume completely debt financed over 20-years
Annual Debt Servicing Requirements:	**$89,369**	average annual debt payment over 20 years
Operating Cost Implications:		
Addition of Full-Service Transfer Site OPEX	$200,734	avg of 2019 full-service Transfer Sites
Adjustment to Direct Operating Costs	**$200,734**	estimated avg. annual 2019 costs
Total Annualized Cash Flow Impact	**$290,102**	annual operating costs + debt servicing

From this analysis, it is calculated that it would be required to fund an upfront capital investment of approximately $1,433,490. If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $89,369. This, plus estimated incremental operating costs of approximately $200,734, would result in a total annual cash flow requirement of approximately $290,102.

From review of the 2019 financial results and 2021 budget for the various direct operating costs at the Bearspaw Chuck Wagon and all other Chuck Wagons, the following table was developed to calculate the estimated annual impact to direct operating costs. It is assumed that the total customers and tonnes of materials would not change based on this increased availability.

Table 9: Estimated Annual Impact to Staff Bearspaw Chuck Wagon

Item	Estimate	Comment
Avg Site Mgmt Costs for All Other Chuck Wagons	$55,634	average of other 4 chuck wagons site mgmt costs
Bearpaw 2019 Site Mgmt Costs	$34,523	2019 results, assume all other costs remain fixed
Increase in Operating Costs per Year	**$21,111**	

From this analysis, it is calculated that it would be required to fund an additional $21,111 in direct operating costs per year to feature an operator at the Bearspaw Chuck Wagon.

A review of Chuck Wagon usage shows that Springhill has more than double the customers and amount of material received when compared to other Chuck Wagons (see Table 10). This, combined with its location in the potentially underserviced NW area of the county, suggests this location to be a potential for expansion to a full-service transfer site.

Table 10: Chuck Wagon Users and Material Amounts (2019)

Chuck Wagon	Number of Users	Cardboard (kg)	Mixed Paper (kg)	Newspaper (kg)	Plastic Bags (kg)	Glass (kg)	Rigid Plastics (kg)	Metal (kg)
Elbow Valley	1,293	2,820	1,165	2,450	266	386	879	641
Keoma	644	2,020	1,093	1,850	487	822	1,453	775
Spring Hill	3,273	2,703	2,083	4,306	725	889	1,678	969
Madden	1,217	1,470	968	2,013	470	750	949	804
Bearspaw	N/A	1,270	788	1,938	235	400	788	206

From review of the 2019 financial results and 2021 budget for the various direct operating costs at the Springhill Chuck Wagon and all full-service Transfer Sites, the following table was developed to calculate the estimated annual impact to direct operating costs of incorporating a full-service Springhill transfer site.

Table 11: Estimated Capital and Operating Cost Implications to Replace Springhill Chuck Wagon with Full-Service Transfer Site

Item	Estimate	Comment
Capital Investments:		
Site Development Costs	$1,067,690	Per capital development estimates in Appendix C
Equipment	$335,800	Per capital development estimates in Appendix C
Land Acquisition	$30,000	assume $6k/acre; estimate 5 acres required
Total Capital Estimate:	**$1,433,490**	
Capital Useful Life (years):	20	
Cost of Debt:	2.2%	assume 100% debt financed over 20 years
Annual Debt Servicing Requirements:	**$89,369**	average annual debt payment over 20 years
Operating Cost Implications:		
Reduction of OPEX from removal of Springhill Chuck Wagon	($70,633)	per 2019 cost of service direct costs
Addition of Full-Service Transfer Site OPEX	$200,734	avg of 2019 full-service Transfer Sites
Adjustment to Direct Operating Costs	**$130,101**	estimated avg. annual 2019 costs
Total Annualized Cash Flow Impact	**$219,470**	annual operating costs + debt servicing

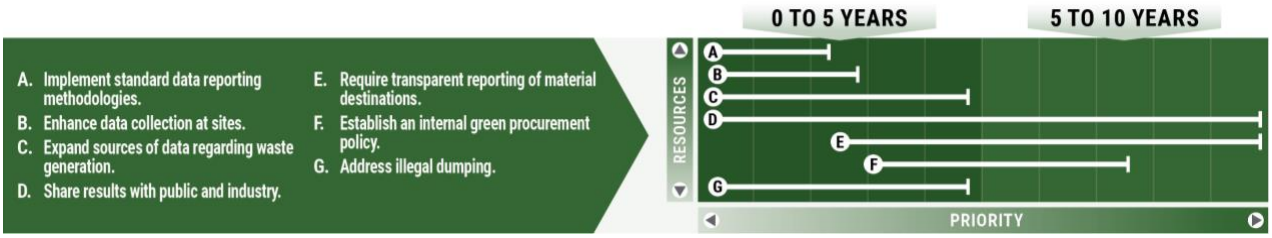
From this analysis, it is calculated that it would be required to fund an upfront capital investment of approximately $1,433,490. If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $89,369. This, plus estimated incremental operating costs of approximately $130,101, would result in a total annual cash flow requirement of approximately $219,470.

Communications/Education

K. **Encourage the development of programs that promote waste reduction and reuse.**

To address the management of waste according to the 3Rs hierarchy, incorporation of reuse options should be considered. One potential option for this is introducing Take-It-Or-Leave-It programs at transfer sites.

Goal 7: RVC measures and demonstrates success of its programs and is recognized as a leader in waste management.



Goal 7 Performance Metrics

Waste Metric: Overall waste per capita

Operational Efficiency Metric: Overall costs of waste management borne by RVC

Data collection, record keeping, and reporting

A. **Implement standard data reporting methodologies.**

B. **Improve data collection and record keeping.**

It is recommended a tool for tracking site tonnage by material type and cost be developed, and site usage by number of RVC customer visits (particularly for transfer sites operated by neighbouring municipalities) to better support future operational reviews and cost of study exercises.

User numbers may indicate whether a site needs to be transitioned to a more permanent Transfer Site, or if the site may need additional staffing. Comparability of Chuck Wagon users and costs with Transfer Sites will also help identify efficiencies in selecting the most appropriate level of service for an area.

C. **Enter into discussions with regional sites, as well as residential communities and local service providers to expand sources of data regarding waste generation in the County.**

As discussed previously, expanding the sources of data to make RVC's tracking system more comprehensive will serve to provide more accurate and complete information on which to base program assessments and planning.

D. **Enhance data dissemination to the public, management and Council.**

This offers opportunities for public communications and education, as well as contributions to Corporate business and work plan development, and annual reporting for corporate direction.

E. **Within service contracts, require transparent reporting of destinations and end markets of all streams.**

Recognized as a leader in waste management

As part of ICI 3Rs waste practices, it is important for the County to provide leadership and adhere to all practices outside businesses are being asked to embrace.

Share programs with public and industry as opportunities arise.

F. Establish and enforce an internal green procurement policy (Finance Department).

Green procurement is a way RVC can directly promote environmental leadership and encourage green products. There are a number of examples of successful green procurement programs that can provide models to follow, including Spruce Grove, whose policy adopted May 24, 2005, states that "the goods and services necessary for the provision of municipal services are obtained in an effective, expedient, and environmentally friendly manner and at the best overall value".

Another example is Seattle, who has a Sustainable Purchasing Policy that acknowledges that City Purchasing and City Departments are to promote and encourage strategies including consumption reduction, due to the societal and community costs, such as landfill waste handling, toxin exposures, resource depletion and greenhouse gas emissions to:

- Reduce City consumption
- Purchase of remanufactured, recycled or reusable products
- Minimize packaging
- Reduce entry toxin chemicals into the City consumption stream
- Purchase products that are durable, long lasting, reusable, recyclable or otherwise decrease waste
- Participate in manufacturer or vendor take-back programs and/or in the King County "Take Back" program

G. Support a RVC campaign and program (multi-department) to identify, clean up and deter illegal dumping sites.

Illegal dumping occurs in almost all communities, including Rocky View County, and the reasons for it are not well understood. It has social, environmental, and economic impacts on the communities it affects, as can be seen from the May 2020 news story of a RVC family dealing with material being illegally dumped on their land. The RVC family not only has to clean up the site, but also has to pay for the disposal fees at transfer sites associated with the cleanup.

The issue of illegal dumping is often used as an argument against the introduction of new waste management programs that feature reduced garbage collection, such as every-other-week collection, or pay-as-you-throw programs (assigning a fee to the frequency or weight of each households' garbage collection). The threat of increased illegal dumping is a major consideration with the introduction of these new programs due to the unsightly and costly problem illegal dumping causes.

According to the Handbook on Waste Management (2014), illegal dumping does not increase with reduced waste collection frequency. Instead, the Handbook indicates that reducing the collection frequency of garbage, increases recycling rates. Specifically, the Handbook states "a policy that attempts to increase the recycling rate does not negatively impact the attempt to reduce illegal dumping."

Conserve Energy Future (2018), an information blog, instead links illegal dumping to the following three causes:

1. High level of overall waste production
2. Avoidance of disposal fees at waste management sites
3. Some people simply don't understand the importance of waste recycling

The Journal of Environmental Planning and Management (2015) confirms Conserve Energy Future's first cause of illegal dumping: "a higher level of expected overall waste production results in a higher rate of illegally dumped waste and a higher number of illegal dumping sites".

Keep Pennsylvania Beautiful (KPB) is an affiliate of the country-wide Keep America Beautiful program and focuses on "empowering Pennsylvanians to make communities clean and beautiful" through illegal dump cleanup and abatement, as well as illegal dump surveys and enforcement. The organization has four guiding principles to assist with managing illegal dumping in the state of Pennsylvania:

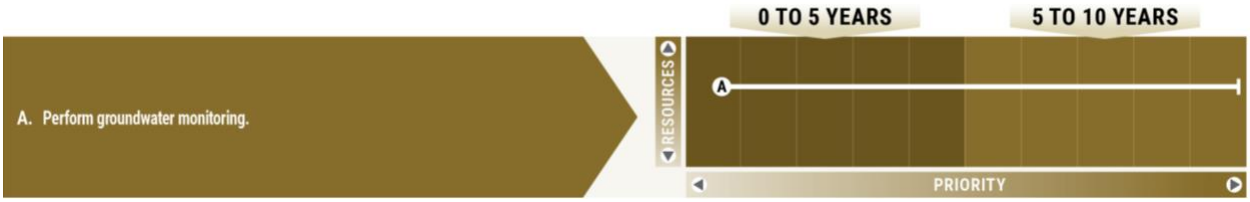
1. Education - key to encourage positive behaviors toward community improvement
2. Individual Responsibility - improving communities, their environment, and quality of life all begins with personal responsibility
3. Public-Private Partnerships - broad-based community alliances are essential to achieve sustainable community improvement
4. Volunteer Action - by engaging volunteers, they extend the reach of educational efforts and multiply the impact of our actions

Keep Pennsylvania Beautiful has four main mechanisms it utilises to both prevent, and deter illegal dumping, as shown in Figure 13.

Figure 13: Mechanisms to Prevent and Deter Illegal Dumping

Additional information on KPB's programs and resources, visit https://www.keeppabeautiful.org/.

Goal 8: Legacy landfills are effectively managed.



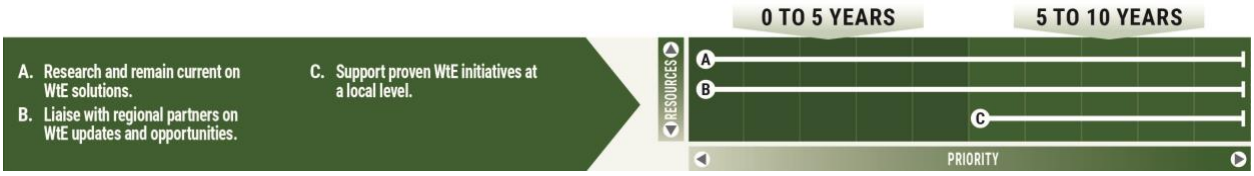
Goal 8 Performance Metrics

Overall Metric: Percentage of inactive landfills meeting all AEP monitoring requirements

Operational Efficiency Metric: Cost of inactive landfill management

A. **Perform groundwater and landfill gas monitoring and report results per Alberta Environment and Parks requirements.**

Goal 9: Advocate with regional neighbours to promote waste to energy to become the go-to for waste disposal.



Goal 9 Performance Metrics

Overall Metric: Number of viable, regional thermal treatment options available for waste generated in Rocky View County.

A. **Research and remain current on waste-to-energy solutions.**

B. **Liaise with regional partners on WtE updates and opportunities.**

C. **Support proven WtE initiatives that could be implemented at a local level where scale and economics make sense.**

3.4 Performance Measures and Metrics

The value of goals and targets is only realized if a tracking system is developed to measure results and outcomes to monitor progress towards these goals. Performance of diversion programs has historically been measured through metrics such as diversion rates and waste disposed. However, a review of available data showed that RVC has a limited waste tracking system that is exacerbated by the lack of data regarding amount of material handled by partnering municipalities.

To provide a foundation for future waste measurement in RVC, sonnevera conducted a waste generation estimate analysis (details in Current State report). The analysis included assumptions regarding population / rate of change over time and waste disposal rate.

In regions such as RVC where there is known waste leakage to surrounding municipalities and several private haulers offering services, it is difficult to obtain an accurate picture of all waste being generated and disposed. Two projections were created for RVC's waste disposal based both on the data available from the facilities owned by RVC and on an assumed disposal rate of 700 kg per capita that is the industry standard assumption for waste disposal in rural Alberta.

Average annual per capita disposal rates were calculated for each facility/service individually based on the municipal population for the service centre and all available reported tonnages, with the following results:

- Langdon Transfer Site 70 kg/capita
- Langdon Curbside Collection 155 kg/capita
- Irricana Transfer Site 140 kg/capita
- Bragg Creek Transfer Site 1,154 kg/capita

It is interesting to note that the disposal rate for Bragg Creek is the only one that resembles the provincial average. The others are much lower, suggesting there are other waste outlets being utilized. This facility review led to an average annual disposal rate of 147 kg/capita that was further adjusted to account for an additional 30% of the waste stream that is estimated to come from the ICI sector.

This exercise disclosed significant data gaps that result in major differences in estimates of waste generation in RVC based on actual disposal recorded at RVC sites vs industry-standard estimates of disposal rates. Efforts to close these gaps through acquisition of additional data would serve to provide additional information on the actual generation of waste in RVC. This led to proposed actions in the servicing strategy that will expand sources of data regarding waste generation in the County.

Rocky View County recently implement an electronic data recording system at the three main Transfer Sites: Langdon, Irricana, and Bragg Creek. This has improved data collection accuracy and efficiency, improving the overall quality of record keeping.

RVC staff also make use of a Site Servicing Processing Tool that allows for the accurate tracking, monitoring, and updating of information related to the servicing of bins at the Transfer Sites. RVC can easily update hauling costs from invoicing, tonnages, servicing dates, etc. This ensures service provider accountability and up-to-date servicing information. Tracked data from this Tool feeds directly into a Main Processing Tool that provides monthly and yearly analysis. Results can also be compared year over year.

RVC's transition to an electronic data management system has improved their ability to disseminate data for Council presentations and reporting diversion results to the public. This system can form the basis for an expanded RVC waste tracking system that is referenced in a number of subsequent goals and objectives.

Plans to build a tracking and reporting system are reflected in the following plan objectives:

- 1C. Develop a standard process and framework for collecting and incorporating data from residential developments into the existing County system for tracking waste management practices and evaluating progress towards Goal 1: residential waste produced in Rocky View County is managed in accordance with the 3Rs Hierarchy. (Also applies to Goal 7)
  - e.g., Require all residential developments to report monthly tonnages of waste, recycling, organics, and other diversion programs to the County
- 2E. Develop a standard process and framework for collecting and incorporating data from the ICI sector into the existing County system for tracking waste management practices and evaluating progress towards Goal 2.
- 3D. Track and evaluate C&D waste.
- 7A. Implement standard data reporting methodologies.
- 7B. Improve data collection and record keeping.
  - e.g., Develop a tool for tracking site tonnage by material type and cost, and site usage by number of RVC customer visits (particularly for transfer sites operated by neighbouring municipalities) to better support future operational reviews and cost of study exercises.
- 7C. Enter into discussions with regional sites, as well as residential communities and local service providers to expand sources of data regarding waste generation in the County.

To provide for accuracy and transparency of data within the tracking and reporting system, the planning objectives (7E) also include requiring transparent reporting of destinations and end markets of all streams within service contracts. Transparency regarding end markets for materials should also include residual rates for processing and recycling facilities.

Once an enhanced tracking and reporting system is implemented, a baseline can be established as a foundation for the measurement process. In the interim, starting with a baseline of the industry standard of 700 kg per capita is a reasonable starting point for overall data monitoring. This baseline will provide a point of reference to establish quantitative future targets. It is noted that waste generation should be measured on a per-capita basis to allow for comparisons as population changes.

In the interim, progress can be monitored in relation to the goals, objectives and actions presented in Appendix A. To assist in this exercise, corresponding proposed Performance Metrics have been identified for each Goal, and supporting KPIs have been developed to assist in measuring progress towards applicable objectives and actions. Performance Metrics for each goal are highlighted in the previous description of supporting actions, while Performance Metrics and KPIs are detailed in Appendix D. As seen, KPIs can be related to waste amounts as well as cost (efficiency). It is anticipated that KPIs will evolve over time as more comprehensive metrics are developed, and desired outcomes are further defined. For example, KPIs related to customer satisfaction could be added if this became a priority measurement of overall services in the county.

3.5 Solid Waste and Recycling Cost of Service

A cost of service review was conducted for the various solid waste and recycling services currently provided to constituents within Rocky View County (RVC).

3.5.1 Solid Waste and Recycling Services Operating Costs

From considering operating costs for Solid Waste and Recycling Services, the allocation of the 2019 results are summarized in Table 12 below:

Table 12: 2019 Dept ID # 51 Operating Results Allocated to Solid Waste and Recycling Services

Community	Solid Waste & Recycling Service	2019 Direct OPEX Actuals	2019 Indirect OPEX Actuals	2019 Total OPEX Actuals (Dept ID #51)
Langdon	Curbside Black Cart	$578,400	$109,369	$687,770
	Curbside Blue Cart			
	Curbside Green Cart			
Langdon	Transfer Site & Recycling Depot	$188,170	$60,587	$248,757
Bragg Creek	Transfer Site & Recycling Depot	$293,065	$96,864	$389,929
Irricana	Transfer Site & Recycling Depot	$151,509	$41,221	$192,730
Springbank	Recycling Depot	$118,054	$27,367	$145,421
Airdrie	Transfer Site, Recycling Depot	$71,355	$13,492	$84,847
Cochrane	Eco Centre	$96,209	$18,192	$114,402
Crossfield	Transfer Site & Recycling Depot	$20,000	$4,636	$24,636
Beiseker	Transfer Site & Recycling Depot	$7,500	$1,739	$9,239
Scott Lake	Transfer Site	$5,000	$1,159	$6,159
Madden	Chuck Wagon	$67,595	$16,672	$84,267
Bearspaw	Chuck Wagon	$39,557	$9,835	$49,392

Community	Solid Waste & Recycling Service	2019 Direct OPEX Actuals	2019 Indirect OPEX Actuals	2019 Total OPEX Actuals (Dept ID #51)
Keoma	Chuck Wagon	$55,189	$13,883	$69,072
Elbow Valley	Chuck Wagon	$53,594	$13,590	$67,184
Springhill	Chuck Wagon	$75,014	$18,922	$93,937
All	Agriculture Round-ups	$54,854	$10,372	$65,227
	Totals	$1,875,067	$457,902	$2,332,970

Included are specific direct costs per service (typically contracted service providers), as well as a variety of indirect administrative costs which were allocated across the specific services based on the distribution of direct costs.

From Table 12, it can be seen that there is a total of approximately $1.9 million of direct O&M expenses with an additional $460 thousand of departmental indirect operating costs, resulting in a total of $2.33 million funding requirement for O&M. This is approximately $400 thousand higher than O&M costs incurred in 2018 (or approximately a 17% increase). However, it is also approximately $86 thousand less than actual results incurred in 2017.

3.5.1.1 Corporate Overhead Cost Allocations

A review of corporate-level operating costs was also performed to identify and calculate appropriate overhead costs which should be allocated to the Solid Waste and Recycling Services to reflect fully loaded costs. These corporate overhead costs are appropriate, as they are required to provide complementary activities (e.g., billing, communications, customer care, etc.) and management oversight.

From this review, it was found that the Solid Waste and Recycling Services represents approximately:

- 2.0% of the budgeted direct expenses across the organization; and
- 1.1% of the budgeted FTE headcount across RVC.

It can be estimated that is it reasonable to include approximately $292 thousand in additional indirect overhead operating expenses as part of the total funding requirement for Solid Waste and Recycling Services. This represents approximately 11.1% of total O&M costs. It is typical for such overhead to generally be approximately 10-15% for municipal utilities, so these costs are within a reasonable range.

3.5.2 Summary Cost of Service

A summary of the relevant costs of service for RVC's Solid Waste and Recycling Services are summarized in Table 13:

Table 13: Summary Cost of Service Allocations

Community	Solid Waste & Recycling Service	2019 Direct OPEX Actuals	2019 Indirect OPEX Actuals	2019 Total OPEX Actuals (Dept ID #51)	2019 Corporate Overhead Allocations	2019 Transfers to Capital Reserves	2019 Total Cost of Service*
Langdon	Curbside Black Cart	$578,400	$109,369	$687,770	$86,147	$13,725	$787,642
	Curbside Blue Cart						
	Curbside Green Cart						
Langdon	Transfer Site & Recycling Depot	$188,170	$60,587	$248,757	$31,158		$279,916
Bragg Creek	Transfer Site & Recycling Depot	$293,065	$96,864	$389,929	$48,841		$438,770
Irricana	Transfer Site & Recycling Depot	$151,509	$41,221	$192,730	$24,141		$216,871
Springbank	Recycling Depot	$118,054	$27,367	$145,421	$18,215		$163,636
Airdrie	Transfer Site, Recycling Depot	$71,355	$13,492	$84,847	$10,628		$95,475
Cochrane	Eco Centre	$96,209	$18,192	$114,402	$14,329		$128,731
Crossfield	Transfer Site & Recycling Depot	$20,000	$4,636	$24,636	$3,086		$27,722
Beiseker	Transfer Site & Recycling Depot	$7,500	$1,739	$9,239	$1,157		$10,396
Scott Lake	Transfer Site	$5,000	$1,159	$6,159	$771		$6,931
Madden	Chuck Wagon	$67,595	$16,672	$84,267	$10,555		$94,822
Bearspaw	Chuck Wagon	$39,557	$9,835	$49,392	$6,187		$55,579
Keoma	Chuck Wagon	$55,189	$13,883	$69,072	$8,652		$77,724
Elbow Valley	Chuck Wagon	$53,594	$13,590	$67,184	$8,415		$75,600
Springhill	Chuck Wagon	$75,014	$18,922	$93,937	$11,766		$105,703
All	Agriculture Round-ups	$54,854	$10,372	$65,227	$8,170		$73,396
	Totals	**$1,875,067**	**$457,902**	**$2,332,970**	**$292,217**	**$13,725**	**$2,638,912**

From this analysis, it is estimated that the current Solid Waste and Recycling Services require total funding of approximately $2.65 million annually.

It is observed that direct operating expenses represent approximately 71% of the annual funding requirements, while administration oversight and management expenses represent an additional 17%. There is presently no external debt and contributions to capital / cash-financed capital expenditures are minimal. Given the model in how the services are operated (i.e., strongly reliant on outsourcing arrangements) this distribution of funding requirements is reasonable.

3.5.3 2019 Cost Recovery Analysis

Table 14 below summarizes the revenues recorded against each Solid Waste and Recycling Service:

Table 14: 2019 Cost Recovery per Solid Waste and Recycling Service

Community	Solid Waste & Recycling Service	2019 Total Cost of Service	2019 Revenues	Cost Recovery Analysis
Langdon	Curbside Black Cart	$787,642	$232,478	71.1%
	Curbside Blue Cart		$194,856	
	Curbside Green Cart		$132,303	
Langdon	Transfer Site & Recycling Depot	$279,916	$68,667	24.5%
Bragg Creek	Transfer Site & Recycling Depot	$438,770	$146,164	33.3%
Irricana	Transfer Site & Recycling Depot	$216,871	$62,302	28.7%
Springbank	Recycling Depot	$163,636	$0	0.0%
	Total TS & Depots	$1,099,192		
Airdrie	Transfer Site, Recycling Depot	$95,475	$4,760	5.0%
Cochrane	Eco Centre	$128,731	$0	0.0%
Crossfield	Transfer Site & Recycling Depot	$27,722	$0	0.0%
Beiseker	Transfer Site & Recycling Depot	$10,396	$0	0.0%
Scott Lake	Transfer Site	$6,931	$0	0.0%
Madden	Chuck Wagon	$94,822	$3,851	4.1%
Bearspaw	Chuck Wagon	$55,579	$775	1.4%
Keoma	Chuck Wagon	$77,724	$4,965	6.4%
Elbow Valley	Chuck Wagon	$75,600	$4,957	6.6%
Springhill	Chuck Wagon	$105,703	$17,726	16.8%
All	Agriculture Round-ups	$73,396	$0	0.0%
	Totals	**$2,638,912**	**$873,805**	**33.1%**

Solid Waste and Recycling Services currently obtain approximately 1/3 ($873,805) of their total funding requirements from user fees and other revenues. These include the following:

- $44,725 from Intermunicipal Agreements (Town of Redwood Meadows and the Town of Irricana);
- $559,637 from Langdon Curbside Collection user fees;
- $224,721 for landfill Tag-a-Bag Fees;
- $44,721 for Recycling Fees obtained for materials primarily supported by Alberta Recycling Management Authority (ARMA) programs (i.e., electronics, paint, used oil, tires).

The remaining 2/3 of costs (approximately $1.79 million) are currently funded from property tax.

3.6 Solid Waste and Recycling Funding Model

A funding model review was conducted to address how costs will be covered for the levels of solid waste and recycling services provided to constituents within Rocky View County (RVC) going forward. It is acknowledged there are various other developer and / or privately delivered solid waste and recycling services within RVC that are not included in this review.

3.6.1 Current Funding Model

The funding model builds on the previous Cost of Service analysis, summarized below:

	1. Curbside Collection Services	2. RVC-Operated Transfer Sites & Depots	3. Intermunicipal Transfer Stations & Depots	4. Chuck Wagons
	• Black Cart • Blue Cart • Green Cart	• Bragg Creek • Irricana • Langdon • Springbank *(relocated)*	• Airdrie • Beiseker • Cochrane • Crossfield • Scott Lake	• Bearspaw • Elbow Valley • Keoma • Madden • Springhill
Direct O&M Costs	$578,400	$750,799	$200,064	$290,950
Dept Admin Costs	$109,369	$226,039	$39,219	$72,903
Corp. OH Costs	$86,147	$122,354	$29,972	$45,575
Capital Costs	$13,725	-	-	-
Total Cost of Service	**$787,642**	**$1,099,192**	**$269,255**	**$409,427**
Revenues	$559,637	$277,133	$4,760	$32,274
% Recovery	**71%**	**25%**	**2%**	**8%**

** Not including Agriculture Round-ups ($73,396 total 2019 cost of service)*

Figure 14: Summary of Current RVC Cost Recovery Performance per Service Category

3.6.2 "To-Be" Funding Model Objectives

A list of alternative funding model priorities spanning customer, environmental / societal, and internal financial perspectives was reviewed, leading to a series of overarching principles upon which the Solid Waste and Recycling Services' funding model can be based:

3.6.3 Curbside Collection Services

1. *"Curbside Customers should pay for their full cost of service where practical vs. rate stability constraints"*

3.6.4 Self-Haul Services

1. ***"User Pay Philosophy vs. Level of Service:** Those who realize the benefit of a standard level of service fund their fair share of the costs incurred to deliver it."*
2. ***"Recognition of "Public Good":** The value of the Self-Haul Diversion Services provided to the entire community is reflected through a community-based funding mechanism."*
3. ***"Waste Diversion:** The Funding Model encourages RVC constituents to adopt and exhibit waste diversion behaviours."*
4. ***"Ease of Administration:** The Funding Model needs to minimize unnecessary complexity."*

5. ***"Financial Sustainability:** The Funding Model needs to support the program's operational sustainability (e.g. service consistency, commodity market fluctuations, hard-to-handle materials, etc.)."*

3.7 Analysis of Funding Model Alternatives

3.7.1 Curbside Collection Services

Based on the principle that Curbside Collection Services customers should ideally pay for their full cost of service relative to rate stability constraints, an evaluation of the potential impact to their monthly bill was performed. This compared the 2019 rates against what rates would have to be to (1) also cover Department Administration costs, and (2) cover both Department Administration and Corporate Overhead costs.

Table 15: Evaluation of Impact to Curbside Collection Services Rates to Fund Additional Costs of Service

Service	2019 Monthly Rates	Increase to Fund Dept Admin Costs		Increase to Fund Total Costs	
		Monthly Rate Required $	Percentage Increase %	Monthly Rate Required $	Percentage Increase %
Black Cart	120L: $10.43 240L: $14.63	120L: $13.52 240L: $17.66	120L: 29.6% 240L: 20.7%	120L: $15.18 240L: $19.83	120L: 45.5% 240L: 35.5%
Blue Cart	$9.72	$11.69	20.3%	$13.12	35.0%
Green Cart	$6.65	$7.70	15.8%	$8.65	30.1%
Totals (120L Black)	**$26.80**	**$32.91**	**22.8%**	**$36.95**	**37.9%**

Based on this evaluation, it is recommended that RVC target to recover the costs of allocated Department Administration costs as well as direct O&M costs and cart replacement contributions for their Curbside Collection Services. This could be implemented over two to four years to minimize any year-over-year rate impacts.

3.7.2 Self-Haul Services

To consider which funding mechanisms RVC should select for its suite of Self-Haul Services, a range of alternative methods were identified as shown in Figure 15.

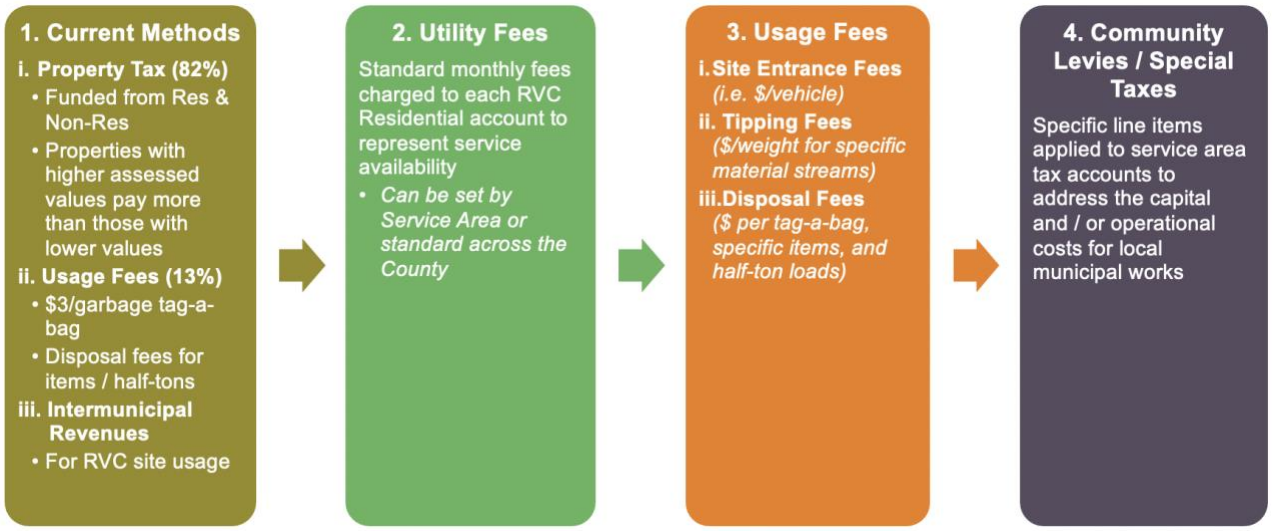


Figure 15: Alternative Solid Waste and Recycling Self-Haul Services Funding Mechanisms

3.7.2.1.1 Funding Mechanisms Recommendations

The review performed for alternative funding mechanisms led to the following recommendations:

1. **Introduce Utility User Fees** to fund base level of costs associated with RVC's portfolio of Self-Haul Diversion Services and activities;

2. **Maintain Usage Fees** to charge customers for garbage disposal materials to further encourage waste diversion (i.e., Garbage Tag-a-Bag and disposal fees for specific items and half-ton loads);

3. **Review and update Intermunicipal Agreements** (i.e., Towns of Irricana and Redwood Meadows) to ensure revenues from neighboring municipalities fund their fully loaded costs of service; and

4. **Reduce reliance on Property Taxes** while continuing to ensure Solid Waste and Recycling Services are fully funded (at least in the interim) given potential Utility User Fee and Usage Fee constraints.

    - *It is noted that, longer-term, RVC could phase-in rate increase and move further off property tax funding.*
    - *It is noted that these adjustments ideally should align with Water and Wastewater rate strategies.*

3.7.2.2 Extent of Costs to Address via Non-Tax Funding Mechanisms

An analysis was performed to determine the extent of costs which can be funded by a utility fee vs property taxes. The following table summarizes this analysis:

Table 16: Estimate of Monthly Self-Haul Services Utility Fee

Utility User Fee Funding Scenario	Annual Property Tax Funding	Equivalent Monthly Rate per HH (13,620 HH's)
Direct O&M Costs	$927,646	$5.68
Direct O&M + Dept Admin Costs	$1,265,807	$7.74
Direct O&M + Dept Admin + Corp OH Costs	$1,463,708	$8.96

A comparison of similar monthly utility fees in select regional municipalities demonstrated that it would be feasible and in line with billing practices from other municipal solid waste utilities to establish a monthly household utility fee of between $5-$6 to help fund RVC's current suite of Self-Haul Services. This charge could be used to offset all direct O&M costs. In turn, taxpayers can see an equal reduction of approximately $900,000 - $1,000,000 in annual requirements from the tax base. This translates to ~ 50% of total property tax funding Waste and Recycling Services received in 2019.

It is also noted that this monthly fee may need to increase to accommodate any other net-new additions or service level increases to RVC's Self-Haul Services such as those described in Goal 6.

3.8 Financial Implications of Recommendations and Capital Investment Plan

For each of the Goal 6 levels of service recommendations (itemized in Objectives G, I, and J), a financial impact analysis on both RVC's capital and operating budget requirements was performed. This section summarizes the resulting financial implications (that are detailed in the goal description section) and, based on a phased implementation, proposes a high-level capital investment plan to guide future service level investments and enhancements.

3.8.1 Goal 6, Objective G: Reduce Frequency of Langdon Black Cart and Blue Cart Collections

It is recommended that the County adjust the curbside collection service levels to be more consistent with accepted best practices. Specifically, with a 3-stream curbside collection system, this would see a reduction in the collection frequency of Black Cart collections from weekly to once every two weeks (this is possible due to the presence and usage of a curbside collection program for organics). It would also see a corresponding reduction of Blue Cart collections from weekly to once every two weeks.

This reduction will result in a reduction in annual curbside collection costs of approximately $58,000, as a result of a 30% cost savings on both blue and black cart collection, representing just under 10% of direct curbside program costs.

3.8.2 Goal 6, Objective I: Add an Additional Operating Day at Bragg Creek Transfer Site

Based on the size constraints and very strong usage at the Bragg Creek Transfer Site, it was recommended that RVC consider operational options to relieve site congestion issues and associated customer service and potential safety issues. A possible consideration, among others, is to establish an extra operating day.

From this analysis, it is calculated that it would be required to fund an estimated additional $55,000 in direct operating costs per year to increase the number of Bragg Creek Transfer Site operating days from 2 to 3.

3.8.1 Goal 6, Objective J: Replace the Springbank Recycling Depot with a Full-Service Transfer Site & Recycling Depot

It is recommended to replace the Springbank Recycling Depot with a full-service Transfer Site and Recycling Depot. This would address an area of the County which is now relatively underserviced and provide enhanced customer service and communications.

From this analysis, it is calculated that it would be required to fund an upfront capital investment of approximately $1.3 million (assuming existing tangible capital assets at the Springbank Recycling Depot can be salvaged and reused at the new site). If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $80,000. This, plus estimated incremental operating costs of approximately $83,000, would result in a total annual cash flow requirement of approximately $162,000.

3.8.2 Goal 6, Objective J: Replace the Springhill Chuck Wagon with a Full-Service Transfer Site & Recycling Depot

It is recommended to replace the Springhill Chuck Wagon service with a full-service Transfer Site and Recycling Depot. This would address an area of the County which is now relatively underserviced.

From this analysis, it is calculated that it would be required to fund an upfront capital investment of approximately $1.5 million. If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $90,000. This, plus estimated incremental operating costs of approximately $130,000, would result in a total annual cash flow requirement of approximately $220,000.

3.8.3 Goal 6, Objective J: Add a Transfer Site in the East Section of RVC between Langdon and Keoma

It is recommended to establish a new full-service Transfer Site and Recycling Depot in the east side of RVC, ideally located between Langdon and Keoma. This would address an area of the County which is now relatively underserviced.

It is estimated that it would be required to fund an upfront capital investment of approximately $1.5 million. If this is completely debt financed at a cost of debt of 2.2%, this would equate to an annual debt servicing payment of approximately $90,000. This, plus estimated incremental operating costs of approximately $200,000, would result in a total annual cash flow requirement of approximately $300,000.

3.8.4 Summary of Capital and Operating Cost Implications

From considering the financial impact analysis across each recommendation, the following summary table is developed:

Table 17: Summary of Estimated Financial Impact of Service Level Adjustments

Recommendation	Capital Estimate	Annual Operating Estimate *(not including debt servicing)*
Reduce Frequency of Langdon Black and Blue Cart Collection to Once Every 2 Weeks	N/A	($58,000)
Add an Additional Operating Day at Bragg Creek Transfer Site	N/A	$55,000
Replace the Springbank Recycling Depot with a Full-Service Transfer Site & Recycling Depot	$1,300,000	$83,000
Replace the Springhill Chuck Wagon with a Full-Service Transfer Site & Recycling Depot	$1,500,000	$130,000
Add a Transfer Site in the East Section of RVC between Langdon and Keoma	$1,500,000	$200,000
Totals:	**$4,300,000**	**$431,000**

From Table 17, the recommendations for Goal 6 combined represent a total of approximately $4.3 million in new capital. Not including debt servicing costs for this capital, RVC's direct operating costs are estimated to increase approximately $400,000.

3.8.5 Implementation of Recommendations and Capital Investments

In considering both the need and ease of implementation for each recommendation requiring a capital investment provided to support Goal #6, the following table summarizes the proposed implementation timing and the estimated capital expenditures.

Table 18: Proposed Capital Investment Timing for Goal #6 Recommendations

Recommendation	Capital Estimate	Implementation Year
Replace the Springbank Recycling Depot with a Full-Service Transfer Site & Recycling Depot	$1.3 million	2023
Replace the Springhill Chuck Wagon with a Full-Service Transfer Site & Recycling Depot	$1.5 million	2025
Add a Transfer Site in the East Section of RVC between Langdon and Keoma	$1.5 million	2027

In addition, the following table summarizes the combined cash flow impacts from all recommendations supporting Goal #6, assuming that all capital investments are debt financed, new capital goes into service halfway through its first year of investment, and that all operating expenses can be subject to a nominal 2% annual inflation rate:

Table 19: Summary of Estimated Financial Impact of Recommended Service Level Adjustments

Recommendation	Cash Flow Impact ($000's) by Implementation Year									
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1. Add Performance Measurement Analyst Administrative Position	$80	$82	$83	$85	$87	$88	$90	$92	$94	$96
2. Add Additional Operating Day at Bragg Creek Transfer Site	$56	$58	$59	$60	$61	$62	$64	$65	$66	$67
3. Replace the Springbank Recycling Depot with a Full-Service Transfer Site		$83	$167	$169	$170	$172	$174	$176	$178	$180
4. Reduce Frequency of Langdon Garbage & Blue Cart Collections to Once Every 2 Weeks			-$62	-$63	-$64	-$66	-$67	-$68	-$70	-$71
5. Replace Springhill Chuck Wagon with a Full-Service Transfer Site & Recycling Depot				$115	$233	$236	$239	$242	$245	$248
6. Add a New Transfer Site in the East Side of RVC between Langdon and Keoma							$155	$315	$320	$325
Total Cash Flow Impact Estimate by Year:	**$136**	**$222**	**$247**	**$365**	**$487**	**$493**	**$655**	**$822**	**$833**	**$844**

From Table 19, it is proposed that RVC first focus on establishing 1 additional operating day per week at the Bragg Creek Transfer Site and expanding the Bearspaw Chuck Wagon to feature an operator and become a full-serviced Chuck Wagon (2022 implementation).

Following this, RVC should consider replacing the Springbank Recycling Depot with a Full-Service Transfer Site (2023 implementation).

Coinciding with these additions, it may be appropriate to consider scaling back the frequency of the Langdon Curbside Black Cart and Blue Cart Collections to once every 2 weeks (2024 implementation). It is acknowledged that this service level adjustment should be piloted within Langdon across 2022 and 2023 to ready residents for such a shift in service levels.

RVC can then consider replacing the Springhill Chuck Wagon with a Full-Service Transfer Site (2025 implementation).

Finally, RVC should consider establishing a new Transfer Site in the east side of RVC in 2024.

In order to accomplish the proposed service level enhancements, it is recognized that additional staff time will be required. To meet this need, an additional position (Performance Measurement Analyst) has been incorporated.

Once all these recommendations have been made, and assuming all capital investments are debt-financed, it is projected that RVC's annual cash flow requirements will increase by approximately

$726,000 (by 2026). Given inflation, this incremental cash flow requirement is expected to grow to approximately $775,000 by 2031.

These estimates are based on the identified service enhancements, and assume if RVC takes on an increased administrative role for services, such as curbside collection in residential communities, these will be delivered on a net cost basis, with no financial impact to RVC.

As a result of the recommended service level enhancements, the total annual operating budget for Waste and Recycling Services will need to increase. Through the funding model evaluation, it was recommended that RVC consider the implementation of a standard utility user fee to help fund a base level of its self-haul transfer sites and chuck wagon services. Given that it may not be feasible to increase a new utility user fee beyond the $5-$6 per RVC account per month, the remaining funding required to support RVC's suite of self-haul services would likely need to be sourced from property tax. This would limit the total potential property tax funding savings from the implementation of a new utility user fee.

3.8.6 Replacement Planning Considerations for Existing Solid Waste Assets

A review of RVC's existing assets was performed for the purpose of analyzing a capital replacement strategy. Although on-site condition assessments of the various assets were not performed (as this was not a requested project scope item), a review was performed of RVC's tangible capital asset information, 2016 replacement cost analysis for transfer site assets (as previously performed by RVC), and original purchase information for the Langdon Curbside Collection Carts (both 120L and 240L versions across Black, Blue, and Green Cart services). Discussion on capital replacement planning in this section is divided into RVC's Transfer Site and Recycling Depots and Curbside Collection Services.

It is noted that an Asset Management Plan has not yet been developed to guide future asset re-investment, rehabilitation, and replacement forecasts. Such a plan is important for municipal utilities to ensure an understanding of the asset inventory, asset criticality, asset condition, required asset performance (relative to the service's targeted performance levels), risks, annual maintenance requirements, and future replacement considerations.

3.8.6.1 Curbside Collection Assets

Although weekly collections and hauling activities are outsourced to a 3rd party contractor, RVC owns the collection carts. The carts were purchased with funds made available from RVC's tax stabilization reserve. Across 2014 to 2017 the following cart quantities by type were purchased:

Table 20: History of Curbside Cart Purchases 2014-2017

Year	Cart Quantities	Cart Type	Original Cost
2014	1,704 1,705	Black Cart 120L Blue Cart 240L	$70,290 $97,219
2015	396 44	Black Cart 240L Blue Cart 240L	$23,945 $2,863
2016	-	-	-
2017	1,793	Green Cart 240L	$115,072

From this listing, $309,389 was spent on a total of 5,642 carts (average purchase price of $55 per cart). It is understood that additional carts have been purchased across 2018-2020 to accommodate customer growth and desired size of Black Cart, as in 2019 there was an average of 1,727 Langdon curbside customers (each with a Black, Blue, and Green Cart).

Typically, industry practices have guided that municipal waste utilities can expect to receive useful lifetime expectancies of 10 years per cart. Using this guidance, this would equate to 1/10th of the cart's useful

economic life being used in 1 year. Given the total cart quantities and original book value as indicated above, this would represent an annual depreciation expense of approximately $31,000. If all carts needed to be replaced at the end of 10 years, an annual reserve contribution of this amount plus an inflation factor would be required. Practically, however it has been observed that several municipal utilities in northern climates are seeing carts last for longer durations (i.e., 10–20 years). Given this extended life and a desire to avoid early, unnecessary reserve contributions, lower annual reserve contributions may be appropriate. In particular, the carts are currently relatively young and should continue to serve the Langdon curbside customers for the next decade.

Upon review of RVC's annual operating expenses, it is observed that it contributed $13,725 to a cart replacement reserve in 2019 and has budgeted a transfer of $14,200 for 2020. Given the extended cart lifetimes seen by other municipal utilities, this is an appropriate annual contribution value. Going forward, this annual amount can be further estimated and managed given actual conditions of the carts and observed replacement trends.

3.8.6.2 Transfer Site and Recycling Depot Assets

A review of tangible capital assets as of 2018 year-end indicated a total of 45 transfer site assets with a combined original book value of approximately $541,000. These primarily consisted of a variety of waste and recycling bins of various sizes and ages, as 33 of the 45 assets were recorded as bins. The remainder consisted of miscellaneous electrical work, building, compactor, site preparation, and other equipment. From an accounting perspective, the remaining net book value of these assets was approximately $205,000. The depreciation periods for all bins were recorded as 10 years, while 5 years was used to fully depreciate the remaining equipment. Combined, an average annual depreciation expense was noted as approximately $74,000.

Additionally, a review of a previous replacement-cost analysis performed by RVC was completed. This analysis itemized individual assets for each transfer site and recycling depot and their estimated replacement value (as of 2016). This review developed replacement cost estimates per transfer site and recycling depot as follows:

- Bragg Creek: $590,600
- Springbank: $165,500
- Irricana: $737,500
- Langdon: $772,500

Across these 4 transfer sites, the total replacement costs were estimated at $2,266,100 (including estimated demolition and paving costs of $300,000 for each the Bragg Creek, Irricana, and Langdon sites). No other details on asset condition, original book value, accumulated depreciation, or net book value were indicated. However, it is acknowledged that the transfer sites have now been in service for approximately 10–20 years. Given an estimated expected lifetime duration for each transfer site at approximately 20–25 years, it is reasonable to conclude that a significant portion of these assets may be approaching the end of their expected useful lives. Further, if an average depreciation period of 25 years is used and the replacement values can be viewed as estimates for original book value, the average annual depreciation expense may be approximately $90,000.

Given the age and replacement estimates for the transfer site assets, it is appropriate that RVC plan for their eventual rehabilitation and replacement. A review of historical operating expenditures indicated an unbudgeted, one-time transfer to a capital reserve of $16,050 in 2019, but there are no consistent capital replacement reserve contributions nor targets for what an appropriate capital replacement reserve level should be. A focused condition assessment review should ideally be completed to inform, prioritize, and plan capital replacement funding requirements. Given the information provided by the 2018 tangible capital assets and 2016 replacement analysis, it may be appropriate to contribute approximately $50,000 to $100,000 annually to a capital replacement reserve to ensure sufficient funds are present to replace aging transfer site infrastructure.

Appendix A

Solid Waste Ideal State, Goals and Objectives

SOLID WASTE MANAGEMENT IDEAL STATE

Waste in Rocky View County is eliminated where possible, with a focus on remaining waste being reused or recycled in systems that maintain products and materials at their highest use.

RVC ROLE

Establish and support services (or service delivery models) in Rocky View County that enable the elimination of waste and encourage a circular economy.

GOALS

Goal 1: Residential waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy (see below).

Goal 2: Industrial, Commercial and Institutional (ICI) waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Goal 3: Construction and demolition (C&D) waste produced from new developments and/or renovations will be minimized and resource reuse maximized.

Goal 4: Rocky View County will be seen as a preferred location for markets and industries that consume recyclables and/or actively minimize waste.

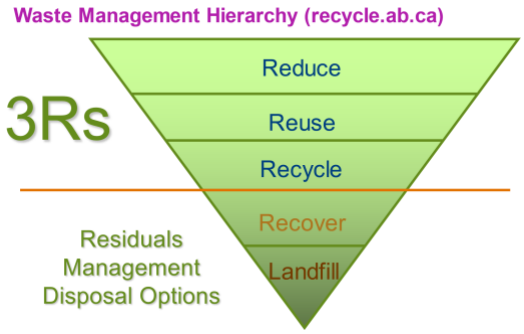
Goal 5: Rocky View County influences and leverages regional, provincial and national opportunities to advance 3Rs policies and programs.

Goal 6: Rocky View County establishes appropriate levels of service that ensure efficient waste management and diversion options are accessible to County residents.

Goal 7: RVC measures and demonstrates success of its programs and is recognized as a leader in waste management.

Goal 8: Legacy landfills are effectively managed.

Goal 9: Advocate with regional neighbours to promote waste to energy to become the go-to for waste disposal.



OBJECTIVES / ACTIONS

OBJECTIVES TO SUPPORT GOAL 1

Setting and applying waste management standards and measuring performance

A. Work with developers, homeowners and other stakeholder groups to establish service standards and waste diversion targets that encourage 3Rs approaches for residential developments.
   - Require detailed information on how materials and waste will be managed to meet the specified service standards and diversion targets during operational phases of residential development prior to subdivision or development approval.

B. Develop and deliver a variety of programs and policy tools that benefit both rural and urban communities in managing their waste in accordance with the 3Rs hierarchy.
   - Work with associated County departments focused on external functions, such as Planning, to encourage integration of effective waste management into broader County planning activities and residential development.

C. Develop a standard process and framework for collecting and incorporating data from residential developments into the existing County system for tracking waste management practices and evaluating progress towards Goal 1: residential waste produced in Rocky View County is managed in accordance with the 3Rs Hierarchy. (Also applies to Goal 7)
   - e.g., Require all residential developments to report monthly tonnages of waste, recycling, organics, and other diversion programs to the County.

D. Where appropriate, support residential developments, home owners associations, and individuals in making arrangements for waste diversion services.

Communications/Education

E. Increase the level of awareness in the County about waste management programs, issues and the need to adopt the 3Rs hierarchy of reducing, reusing, and recycling waste.
   - RVC to provide enhanced waste education to all County residents.

F. Apply Community-Based Social Marketing principles when introducing, advertising, or educating on new or existing waste management and diversion programs.
   - Build consistent branding and signage at all sites.
     - Specifically, improve instructional signage at Scott Lake Transfer Site and Crossfield Transfer Site.

OBJECTIVES / ACTIONS

OBJECTIVES TO SUPPORT GOAL 2

Setting and applying waste management standards and measuring performance

A. Work with businesses, business associations, developers and the like to establish waste management standards and waste diversion targets for ICI sectors.
B. Develop programs and policy tools that support recycling and organics diversion in the ICI sector to meet the waste management standards.
    - As part of the approval process, require ICI developments to submit a waste management plan that outlines how waste will be managed according to the RVC waste management standards.
C. Introduce a Business Waste Diversion Education program to assist businesses to embrace 3Rs initiatives.
D. Consider creating a RVC waste and recycling bylaw for the ICI sector to support the waste management standards.
E. Develop a standard process and framework for collecting and incorporating data from the ICI sector into the existing County system for tracking waste management practices and evaluating progress towards Goal 2.
F. Form alliances with business associations to support 3Rs activities in the County.
G. Integrate waste management into broader County planning activities.
    - Work with associated County departments focused on internal functions, such as Corporate Properties, to encourage integration of effective waste management into internal County activities and programs.
    - Work with associated County departments focused on external functions, such as Planning, to encourage integration of effective waste management into broader County activities and development.
H. Support agricultural operators within the County with waste and recycling services and programs specific to ag industry needs.
    - e.g., Monitor RVC's current agricultural plastics program at Irricana, and assess whether it makes sense to apply for additional collection sites if the program becomes permanent.
I. Encourage waste reduction at special events in the County, and facilitate by providing education and service options.

OBJECTIVES TO SUPPORT GOAL 3

Setting and applying waste management standards and measuring performance

A. Establish waste diversion standards and targets for the C&D sector.
D. Develop programs and policy tools that support recycling and organics diversion in the C&D sector to meet the waste management standards.
E. Develop a resource guide for C&D reduction/recycling in RVC and region.
F. Track and evaluate C&D waste
G. Consider requiring, all new build developments to submit a waste management plan that outlines how waste will be managed according to the RVC 3Rs hierarchy C&D standards.
    - Require renovation projects over a certain size to adhere to RVC C&D renovation standards.

OBJECTIVES / ACTIONS

OBJECTIVES TO SUPPORT GOAL 4

3Rs Market development and industry attraction

A. Maximize the efficiency and success of solid waste and recycling programs by engaging in public and private partnership opportunities for solid waste and/or recycling when it is beneficial to do so.
B. Consider 3Rs incentives
C. Host Circular Economy sessions for specific industries of interest
D. Support and promote markets and industries that utilize recyclables and/or actively minimize waste.
E. Develop collaborative approaches with land-use bylaw to support 3Rs market development in the County.
   - Incorporate Alberta's new Code of Practice for Compost Facilities into its planning processes by requiring operators to adhere to the Code of Practice for any composting operations.

     Close communication with AEP regarding any potential facilities will also serve to avoid potential issues.

OBJECTIVES TO SUPPORT GOAL 5

Regional servicing and economies of scale

A. In accordance with levels of service standards and cost of service, enlist regional and intermunicipal partnerships for the delivery of solid waste management services to improve convenient access, economies of scale, or other program efficiencies if economically and politically feasible and desirable.
B. Work towards harmonization of services between sites.
C. Develop a consistent contract and cost-sharing formula for external sites that RVC residents use.
D. Work to identify economies of scale across RVC's multiple sites and neighbouring sites, including consideration of bulk purchases of equipment, developing common contract terms for outsourced arrangements, and leveraging the scale of RVC's multiple sites to exercise buyer power during outsourcing arrangement contract negotiations.
E. Work together with regional partners to develop less prescription in RFPs; defining outcomes rather than methods.

Intergovernmental influence and participation

F. Actively support and participate on regional, provincial, and intermunicipal waste management councils, boards, committees.
G. Participate in the development of regional waste strategies, such as the the Calgary Metropolitan Regional Boards' servicing strategies.
H. Join other municipalities in lobbying for the adoption of provincial policy supporting 3Rs hierarchy and circular economy.
   - e.g., EPR (initially for packaging and printed paper) in Alberta.
I. Honour and support regional, provincial and national waste management targets.

OBJECTIVES / ACTIONS

OBJECTIVES TO SUPPORT GOAL 6

Setting and applying waste management levels of service

A. Establish definitions for service levels for communities and associated harmonization of recycling options between equivalent programs.
   - e.g., Establish hours of operation that meet service demands.
   - e.g., Establish standards for distance to sites.

B. Review cost of servicing for different levels of service for waste management in RVC.

C. Select a preferred funding model for solid waste services and establish a policy and plan to transition to this preferred model.

D. Determine a set of criteria for when the responsibility for waste management services should/might transfer to RVC.

E. Remain current on Waste to Energy options and their costs.

F. Consider likely EPR program elements in RVC programming choices.

G. Consider accepted best practices in establishing service levels.
   - e.g., Adjust curbside collection service levels to be more consistent with accepted best practices. Specifically, Garbage – every other week; Recyclables – every other week; Organics – weekly in summer; every other week in winter.

Rural Based Programs

H. Evaluate and improve on the established levels of service at current self-haul sites.
   - e.g., Regularly review accepted materials at collection sites to ensure programs remain current.
   - e.g., Conduct a review of transfer site use at different times of year, and consider shorter winter operating hours if warranted at specific locations (i.e., Langdon).
   - e.g., Conduct further analysis of facility service population based on drive times in addition to distance to the facility.

I. As required, improve site design, conditions and accessibility.
   - e.g., Incorporate cashless payment method options.
   - e.g., Conduct a site design review of the Bragg Creek Transfer Site to consider options for redesign to improve efficiency and reduce traffic congestion.
     - As part of the review, consider options to relocate the kiosk (e.g., closer to the site entrance for better visibility), as well as potential locations for a compactor bin for plastics.
     - Consider adding a satellite location for certain materials to reduce the burden on the site.
     - Review options to add an additional transfer site operating day at Bragg Creek.

J. Consider site additions or enhancements in underserviced areas
   - e.g., Consider siting a full-service transfer site in the NW of the county to replace the Springhill Chuck Wagon.
   - e.g., Consider operating the Springbank Recycling Depot as a full-service transfer site, with attendant and user-pay garbage option.
   - e.g., Consider adding a transfer site in the east section of RVC between Langdon and Keoma.
   - e.g., Consider an inter-municipal agreement with City of Chestermere to permit RVC residents use of the City's recycling depot, and/or establish an agricultural roundup / Chuck Wagon location near Chestermere.

Communications/Education

K. Encourage the development of programs that promote waste reduction and reuse.
   - e.g., consider introducing Take-It-Or-Leave-It programs at the transfer sites.

OBJECTIVES / ACTIONS

OBJECTIVES TO SUPPORT GOAL 7

Data collection, record keeping, and reporting

A. Implement standard data reporting methodologies.
B. Improve data collection and record keeping.
   - e.g., Develop a tool for tracking site tonnage by material type and cost, and site usage by number of RVC customer visits (particularly for transfer sites operated by neighbouring municipalities) to better support future operational reviews and cost of study exercises.
     - e.g., User numbers may indicate whether a site needs to be transitioned to a more permanent Transfer Site, or if the site may need additional staffing. Comparability of Chuck Wagon users and costs with Transfer Sites will also help identify efficiencies in selecting the most appropriate level of service for an area.
C. Enter into discussions with regional sites, as well as residential communities and local service providers to expand sources of data regarding waste generation in the County.
D. Enhance data dissemination to the public, management and Council.
E. Within service contracts, require transparent reporting of destinations and end markets of all streams.

Recognized as a leader in waste management

F. Establish and enforce an internal green procurement policy (Finance).
G. Support a RVC campaign and program (multi-department) to identify, clean up and deter illegal dumping sites..

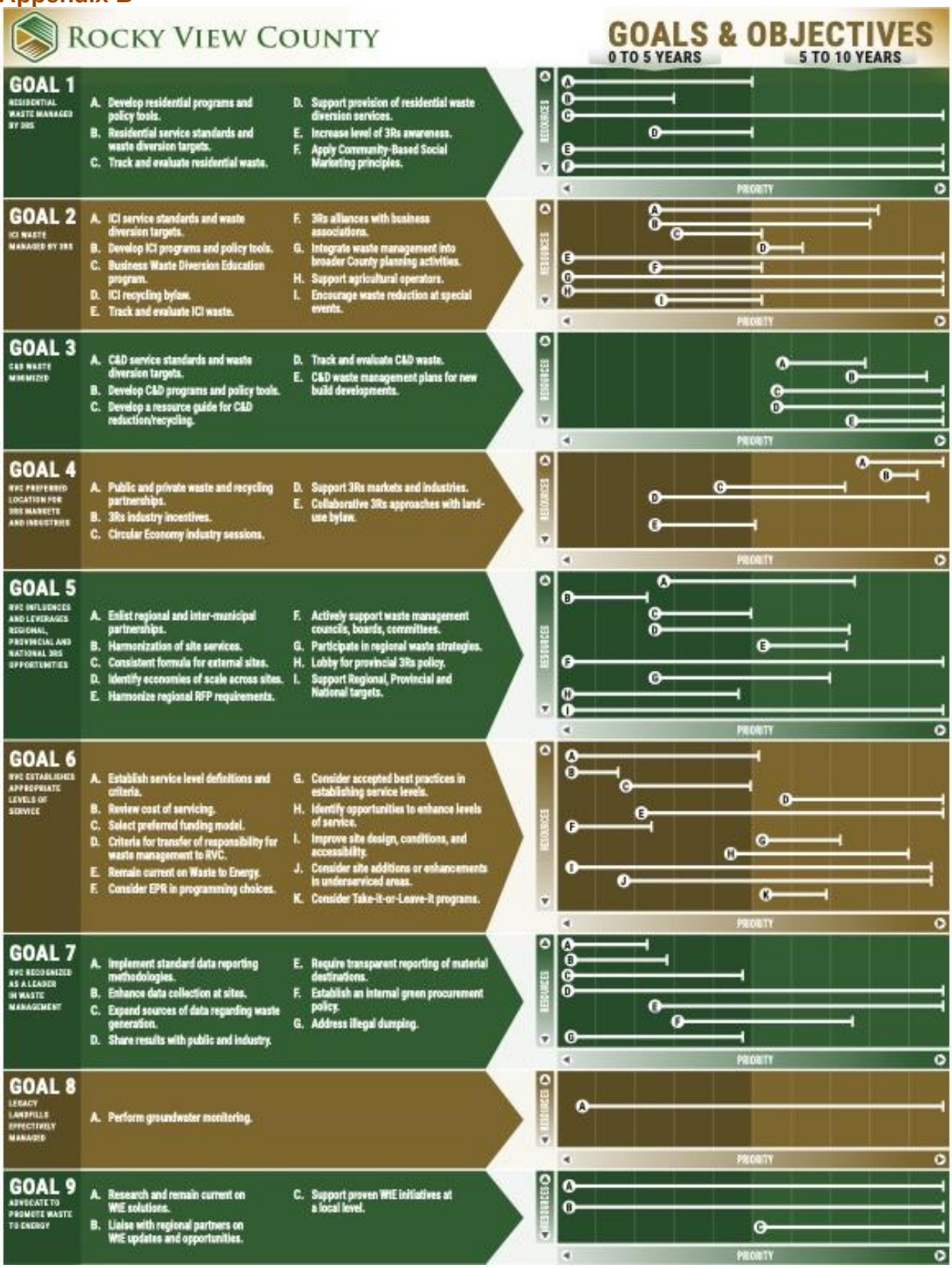
OBJECTIVES TO SUPPORT GOAL 8

A. Perform groundwater monitoring and report results per Alberta Environment and Parks requirements.

OBJECTIVES TO SUPPORT GOAL 9

A. Research and remain current on waste-to-energy solutions.
B. Liaise with regional partners on WtE updates and opportunities.
C. Support proven WtE initiatives at a local level.

Appendix B


ROCKY VIEW COUNTY
GOALS & OBJECTIVES
0 TO 5 YEARS
5 TO 10 YEARS
GOAL 1
RESIDENTIAL WASTE MANAGED BY 3RS
A. Develop residential programs and policy tools.
B. Residential service standards and waste diversion targets.
C. Track and evaluate residential waste.
D. Support provision of residential waste diversion services.
E. Increase level of 3Rs awareness.
F. Apply Community-Based Social Marketing principles.
GOAL 2
ICI WASTE MANAGED BY 3RS
A. ICI service standards and waste diversion targets.
B. Develop ICI programs and policy tools.
C. Business Waste Diversion Education program.
D. ICI recycling bylaw.
E. Track and evaluate ICI waste.
F. 3Rs alliances with business associations.
G. Integrate waste management into broader County planning activities.
H. Support agricultural operators.
I. Encourage waste reduction at special events.
GOAL 3
C&D WASTE MINIMIZED
A. C&D service standards and waste diversion targets.
B. Develop C&D programs and policy tools.
C. Develop a resource guide for C&D reduction/recycling.
D. Track and evaluate C&D waste.
E. C&D waste management plans for new build developments.
GOAL 4
RVC PREFERRED LOCATION FOR 3RS MARKETS AND INDUSTRIES
A. Public and private waste and recycling partnerships.
B. 3Rs industry incentives.
C. Circular Economy industry sessions.
D. Support 3Rs markets and industries.
E. Collaborative 3Rs approaches with land-use bylaw.
GOAL 5
RVC INFLUENCES AND LEVERAGES REGIONAL, PROVINCIAL AND NATIONAL 3RS OPPORTUNITIES
A. Enlist regional and inter-municipal partnerships.
B. Harmonization of site services.
C. Consistent formula for external sites.
D. Identify economies of scale across sites.
E. Harmonize regional RFP requirements.
F. Actively support waste management councils, boards, committees.
G. Participate in regional waste strategies.
H. Lobby for provincial 3Rs policy.
I. Support Regional, Provincial and National targets.
GOAL 6
RVC ESTABLISHES APPROPRIATE LEVELS OF SERVICE
A. Establish service level definitions and criteria.
B. Review cost of servicing.
C. Select preferred funding model.
D. Criteria for transfer of responsibility for waste management to RVC.
E. Remain current on Waste to Energy.
F. Consider EPR in programming choices.
G. Consider accepted best practices in establishing service levels.
H. Identify opportunities to enhance levels of service.
I. Improve site design, conditions, and accessibility.
J. Consider site additions or enhancements in underserviced areas.
K. Consider Take-it-or-Leave-it programs.
GOAL 7
RVC RECOGNIZED AS A LEADER IN WASTE MANAGEMENT
A. Implement standard data reporting methodologies.
B. Enhance data collection at sites.
C. Expand sources of data regarding waste generation.
D. Share results with public and industry.
E. Require transparent reporting of material destinations.
F. Establish an internal green procurement policy.
G. Address illegal dumping.
GOAL 8
LEGACY LANDFILLS EFFECTIVELY MANAGED
A. Perform groundwater monitoring.
GOAL 9
ADVOCATE TO PROMOTE WASTE TO ENERGY
A. Research and remain current on WtE solutions.
B. Liaise with regional partners on WtE updates and opportunities.
C. Support proven WtE initiatives at a local level.
RESOURCES
PRIORITY

Appendix C: Transfer Site Costing Estimates

Option 1 – Transfer/Recycling Facility
Walk-up compactors for cardboard and plastic

Site Development

DESCRIPTION	ESTIMATED QTY	UNITS	Tetra Tech's Estimate UNIT RATE $	Tetra Tech's Estimate Total
MobDemob	1	LS	$ 100,000	$ 100,000
Cast-in-Place Concrete Pads	2	LS	$ 7,000	$ 14,000
Spill Flaps (includes chain and winch)	2	Each	$ 9,500	$ 19,000
Signs	1	LS	$ 5,000	$ 5,000
Pre-Fabricated Site Office	1	LS	$ 35,000	$ 35,000
40 ft Modified Sea container (HHW,Electronics/used oil tank)	1	ea	$ 60,000	$ 60,000
Striping of Materials	5,000	m3	$ 7	$ 35,000
Ditch/swale excavation	150	LM	$ 70	$ 10,500
Engineered Fill	4,000	m3	$ 13	$ 52,000
Pavement	2,500	m2	$ 35	$ 87,500
Granular Subbase	2,500	m2	$ 12	$ 28,750
Granular Base Course	2,500	m2	$ 8	$ 18,750
Fall Projection Barrier	30	LM	$ 70	$ 2,100
Chain Link Fence and Gates	300	LM	$ 100	$ 30,000
Pesticide pole shed/fencing	1	LS	$ 60,000	$ 60,000
Topsoil Placement and Grading	1,000	m2	$ 8	$ 8,000
Hydraulic Seeding	1,000	m2	$ 1	$ 1,000
Lock Block MSE Wall	75	LM	$ 1,300	$ 97,500
Concrete Wheel Stops	4	Each	$ 250	$ 1,000
Walk-up steps for compactors	2	LM	$ 6,000	$ 12,000
Bollards	4	Each	$ 700	$ 2,800
Non-Perforated Drain Pipe	30	LM	$ 80	$ 2,400
Culverts	20	LM	$ 350	$ 7,000
Electrical Work (3 Phase/Lighting)	1	LS	$ 132,000	$ 132,000
Sub-total				$ 821,300
30% Contingency				$ 246,390
Engineering				$ 164,260
Total (Excluding GST)				**$ 1,067,690**

Equipment

DESCRIPTION	ESTIMATED QTY	UNITS	Tetra Tech's Estimate UNIT RATE $	Total
40 yd Roll-off Bins	4	ea	$ 9,000	$ 36,000
Roll-off compactor Combo	2	ea	$ 30,000	$ 60,000
40 yd Roll-off Recycling Bins	5	ea.	$ 10,000	$ 50,000
Sub-total				$ 146,000
30% Contingency				$ 43,800
Total (Excluding GST)				**$ 335,800**

Total Project

DESCRIPTION	ESTIMATED QTY	UNITS	Tetra Tech's Estimate UNIT RATE $	Total
Site Development				$ 1,067,690
Equipment	2	ea	$ 30,000.00	$ 335,800
Total Site Development and Equipment				**$ 1,403,490**

Appendix D: Performance Metrics and KPIs

Goal 1: Residential waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Waste Metric: Residential waste disposed per capita Note: metric listed per capita to allow evolution as RVC population changes *Data Sources: Langdon curbside tonnages, transfer site and chuck wagon waste tonnages, residential development tonnages (future)*	Operational Efficiency Metric: Curbside collection program yearly operating costs per household *Data Sources: Langdon curbside cost of service*

KPIs:

- Residential development monthly and yearly disposal tonnages (ideally per capita)
- Residential development monthly and yearly diversion (recycling and organics) tonnages (ideally per capita)
- Number of coordinated collection service agreements, based on RVC levels of service, for residential developments, home owners associations, and individuals
- Number of RVC sites (including Transfer Sites and Chuck Wagons) with RVC branded signage

Goal 2: Industrial, Commercial and Institutional (ICI) waste produced in Rocky View County will be managed in accordance with the 3Rs Hierarchy.

Waste Metric: ICI waste disposed per capita

Data Sources: ICI development reporting; haulers

KPIs:

- ICI tonnage disposed (requires reporting from ICI establishments)
- Number of waste management plans submitted by ICI developments
- Number of businesses participating in a Waste Diversion Education program
- Number of infractions to an ICI Waste & Recycling Bylaw
- Number of ICI contributors submitting waste disposal and diversion data to RVC (could evolve to become a % metric)
- Number of relationships established between RVC and business associations
- Number of special events in RVC with waste reduction options consistent with a developed standard of service
- Number of Irricana site users accessing the agricultural plastics program
  - *Baseline (2020): 29 (RVC residents)*

Goal 3: Construction and demolition (C&D) waste produced from new developments and/or renovations will be minimized and resource reuse maximized.

Waste Metric: C&D waste disposed per capita

Data Sources: C&D developers; haulers

KPIs:

- C&D tonnage disposed
- Number of C&D contributors submitting waste disposal and diversion data to RVC
- Number of new build developments submitting waste management plans

Goal 4: Rocky View County will be seen as a preferred location for markets and industries that consume recyclables and/or actively minimize waste.

Overall Metric: Number of diversion-focused facilities residing in RVC

KPIs:

- Number of incentive-based programs designed to encourage 3Rs business development
- Number of Circular Economy sessions hosted by RVC

Goal 5: Rocky View County influences and leverages regional, provincial and national opportunities to advance 3Rs policies and programs.

Overall Metric: Percentage of sites in RVC consistent with the standard level of service *Data Sources: Intermunicipal sites, percentage of sites in RVC with consistent garbage fees, number of materials collected for diversion at Transfer Sites, site operating hours, percentage of sites that are staffed, number of sites with cashless payment options*	Operational Efficiency Metric: RVC waste management site costs per tonne *Data Sources: Intermunicipal site contracts, hauling costs, capital costs, servicing costs*

KPIs:

- Number of regional and intermunicipal partnerships focused on delivering waste management services to RVC residents
- Percentage of intermunicipal sites consistent with the standard level of service
- Percentage of sites with consistent garbage fees
  - *Goal: 100% by 2023*
  - *Baseline (2020): 80% (Crossfield, Beiseker, Scott Lake either don't collect garbage or charge different fees)*

Goal 6: Rocky View County establishes appropriate levels of service that ensure efficient waste management and diversion options are accessible to County residents.

Overall Metric: Percentage of households within 15 km of waste management service sites *Data Sources: GIS mapping* *Baseline: 91% (2020); 13,400 homes*	Operational Efficiency Metric: Cost of service (on a per-tonne basis) for different levels of waste management service in RVC (e.g., Black cart collection per tonne cost, Transfer Site garbage collection cost per tonne) *Data Sources: Hauling costs, capital costs, servicing costs, intermunicipal site contracts*

KPIs:

- Cost of service for different levels of waste management service in RVC
  - Baseline: Per unit and per tonne 2019 Costs for Langdon Curbside Collection Services

Per Unit Metric	Black Cart	Blue Cart	Green Cart	Summary Across 3 Cart Types
Cost per Scheduled Collection	$3.20	$2.93	$2.31	$2.85
Cost per Tonne	$410.22	$773.32	$253.08	$426.18

  - Baseline: 2019 Cost Recovery per Solid Waste and Recycling Service

Community	Solid Waste & Recycling Service	2019 Total Cost of Service	2019 Revenues	Cost Recovery Analysis
Langdon	Curbside Black Cart	$729,002	$232,478	76.8%
	Curbside Blue Cart		$194,856	
	Curbside Green Cart		$132,303	
Langdon	Transfer Site & Recycling Depot	$285,757	$68,667	24.0%
Bragg Creek	Transfer Site & Recycling Depot	$447,868	$146,164	32.6%
Irricana	Transfer Site & Recycling Depot	$221,574	$62,302	28.1%
Springbank	Recycling Depot	$173,120	-	0%
Airdrie	Transfer Site, Recycling Depot	$101,208	$4,760	4.7%
Cochrane	Eco Centre	$136,460	-	0%
Crossfield	Transfer Site & Recycling Depot	$29,329	-	0%
Beiseker	Transfer Site & Recycling Depot	$10,998	-	0%
Scott Lake	Transfer Site	$7,332	-	0%
Madden	Chuck Wagon	$96,921	$3,851	4.0%
Bearspaw	Chuck Wagon	$56,807	$775	1.4%
Keoma	Chuck Wagon	$79,437	$4,965	6.3%
Elbow Valley	Chuck Wagon	$77,263	$4,957	6.4%
Springhill	Chuck Wagon	$108,032	$17,726	16.4%
All	Agriculture Round-ups	$77,803	-	0%
	Totals	**$2,638,912**	**$873,805**	**33.1%**

– Baseline: 2019 Per Unit Service Level Costs (Self-Haul)

Collection Site	Cost per user/month ($)	Cost per tonne ($)	Cost per RVC HH within 15 km per month ($)
Langdon	2.78	580	8.5
Bragg Creek	1.79	440	39
Irricana	7.87	755	36
Springbank	N/A	720	2.50
Airdrie	3.89	360	5.60
Cochrane	N/A	480	2.80
Crossfield	1.29	54	4.30
Beiseker	3.33	N/A	3
Scott Lake	N/A	N/A	1.80

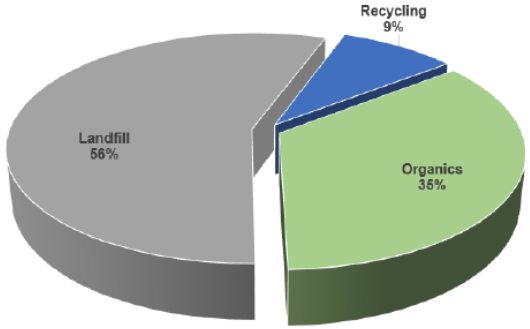
- Curbside collection disposal tonnages
- Curbside collection diversion (recycling and organics) tonnages

Year (2019) **Diversion rate: 58%**	RECYCLABLES	ORGANICS	GARBAGE
URBAN / RESIDENTIAL HIGHER DENSITY AREAS (> 400 PEOPLE PER KM²)	352 tonnes or 209 kg/hh	640 tonnes or Or 379 kg/hh	726 tonnes or 430 kg/household

- Curbside collection program yearly operating costs

Year (2019)	RECYCLABLES / ORGANICS / GARBAGE
URBAN / RESIDENTIAL HIGHER DENSITY AREAS (> 400 PEOPLE PER KM²)	Total OPEX Actuals (Dept ID #51) = $636,000 Total Cost of Service = $729,000 Cost/household = $430 (1688 households)

- Curbside waste audit results (garbage stream composition)

Baseline Year (2018)	GARBAGE
URBAN / RESIDENTIAL HIGHER DENSITY AREAS (> 400 PEOPLE PER KM²)	

- Percentage of RVC-acccesible sites that accept garbage for a fee
  - *Baseline (2020): 86% (Scott Lake, Bearspaw (2019) do not)*
- Percentage of RVC sites that are staffed
- Estimated tonnage of materials received for diversion at Chuck Wagons
  - *Baseline: Table: Chuck Wagon Users and Estimated Material Amounts (2019)*

Chuck Wagon	Number of Users	Cardboard (Kg)	Mixed Paper (Kg)	Newspaper (Kg)	Plastic Bags (Kg)	Glass (Kg)	Rigid Plastics (Kg)	Metal (Kg)
Elbow Valley	1,293	2,820	1,165	2,450	266	386	879	641
Keoma	644	2,020	1,093	1,850	487	822	1,453	775
Spring Hill	3,273	2,703	2,083	4,306	725	889	1,678	969
Madden	1,217	1,470	968	2,013	470	750	949	804
Bearspaw	N/A	1,270	788	1,938	235	400	788	206

- Percentage of RVC residents within 15 km of a RVC waste management facility
  - Baseline: Table: Number of RVC Households within 15 km of Facilities

Facility	#RVC Households within 15km
Langdon Transfer Station & Recycling Depot	2,800
Bragg Creek Transfer Station & Recycling Depot	964
Irricana Transfer Station & Recycling Depot	516
Springbank Recycling Depot	5,724
Airdrie Transfer Station (TS) & Recycling Depot (RD)	1,498
Cochrane Eco Centre	4,097
Crossfield Transfer Station & Recycling Depot	569
Beiseker Transfer Station & Recycling Depot	310
Scott Lake Transfer Station	334
Bearspaw Chuckwagon	5,347
Elbow Valley Chuckwagon	4,087
Keoma Chuckwagon	758
Madden Chuckwagon	570
Springhill Chuckwagon	2,077

- Number of materials collected for diversion at RVC transfer sites

- Average number of transfer site users per year
  - *Baseline: Table: RVC Transfer Site Users and Material Amounts (2019)*

Transfer Site	# of Users	Garbage (tonnes)	Recyclables (tonnes)	Organics (tonnes)
Bragg Creek	20,000*	681	221	108
Irricana	3,339	206	87	5**
Langdon	8,592	306	124	53

*estimated from partial data
**incomplete data

- Average number of site users per hour at sites on a seasonal basis (summer vs. winter).
  In winter, at sites experiencing less than 5 vehicles per hour towards the end of the day, closing the site early could be warranted. Often sites will experience less demand and could justify closing earlier in winter months due to lack of daylight hours.
- Average RVC resident drive time to closest waste management site
- Number of RVC Transfer Sites with cashless payment options
- Number of Take-It-Or-Leave-It (or similar) options at RVC sites

Goal 7: RVC measures and demonstrates success of its programs and is recognized as a leader in waste management.

Waste Metric: Overall waste per capita *Data Sources: Waste disposed from all sectors*	Operational Efficiency Metric: Overall costs of waste management borne by RVC

KPIs

- Internal RVC waste disposal tonnage (per employee)
- Number of internal RVC diversion programming options
- Number of illegal dumping sites
- Number of illegal dumping infractions (bylaw)
- Annual costs of illegal dumping clean-up

Goal 8: Legacy landfills are effectively managed.

Overall Metric: Percentage of inactive landfills meeting all AEP monitoring requirements *Data Sources: AEP reporting – groundwater and LFG monitoring*	Operational Efficiency Metric: Cost of inactive landfill management *Baseline: $13,005 for Bragg Creek Landfill Monitoring (2019); and $23,868 for Irricana Landfill Monitoring (2019).*	

Goal 9: Advocate with regional neighbours to promote waste to energy to become the go-to for waste disposal.

Overall Metric: Number of viable, regional thermal treatment options available for waste generated in Rocky View County.

KPIs:

- Number of WTE options reviewed for treatment of RVC waste
- Number of regional WtE sessions hosted by RVC