



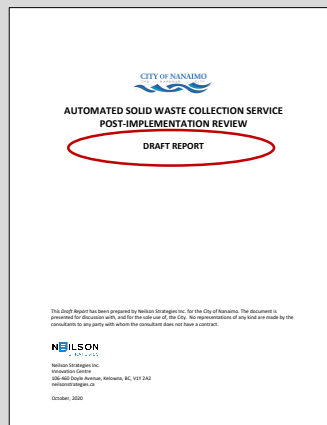
**CITY OF NANAIMO
AUTOMATED SOLID WASTE COLLECTION SERVICE**

POST-IMPLEMENTATION REVIEW



OVERVIEW

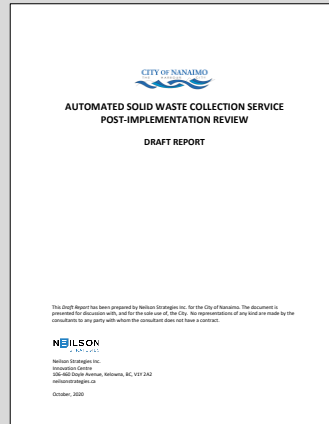
- ▶ Purpose of Service Review
- ▶ Existing Service
- ▶ Benefits of the Service
- ▶ Challenges to Address
- ▶ Recommendations to Consider
 - ✓ 2021 fiscal year
 - ✓ beyond 2021





PURPOSE

- ▶ Significant investment in the service
- ▶ Conditions since inception have changed
- ▶ Desire to determine changes needed to strengthen service
 - ✓ efficiency
 - ✓ sustainability



EXISTING SERVICE

- ▶ Cart-based service
- ▶ Public health, environmental and community goals
- ▶ *Bylaw No. 7128* sets out service level and requirements
- ▶ In-house service delivery





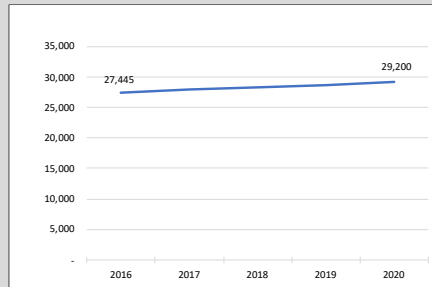
EXISTING SERVICE

- ▶ CNG vehicles + back-ups
- ▶ Split-load vehicles, 60-40
- ▶ Mid-Island Co-op for fuel



EXISTING SERVICE

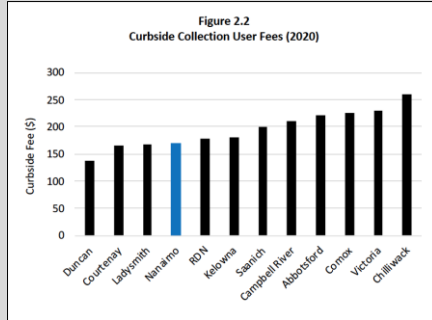
- ▶ CNG vehicles + back-ups
- ▶ Split-load vehicles, 60-40
- ▶ Mid-Island Co-op for fuel
- ▶ Consistent growth in households





EXISTING SERVICE

- ▶ Service Revenues
 - ✓ user fees
 - ✓ Recycle BC contract



EXISTING SERVICE

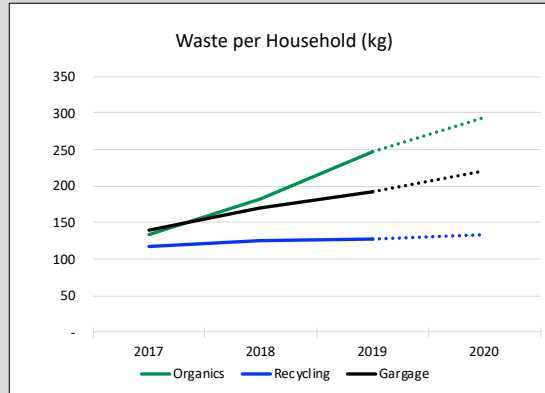
- ▶ Service Revenues
 - ✓ user fees
 - ✓ Recycle BC contract
- ▶ Service Expenses
 - ✓ tipping fees
 - ✓ labour
 - ✓ fleet charges
 - ✓ debt servicing





EXISTING SERVICE

- ▶ Materials collected by weight



EXISTING SERVICE

- ▶ Materials by volume

Waste Stream	2019 (Jul-Aug)		2020 (Jul-Aug)	
	Tickets	Tonnes	Tickets	Tonnes
Organics	1,483	4,639	1,785	5,674
Recycling	1,419	2,434	1,584	2,391
Gargage	773	3,544	883	4,269



BENEFITS

- ▶ Worker safety
- ▶ Service scope
- ▶ GHG emissions
- ▶ Data collection



BENEFITS

- ▶ Worker safety
- ▶ Service scope
- ▶ GHG emissions
- ▶ Data collection
- ▶ Convenience
- ▶ Cleanliness





BENEFITS

- ▶ Worker safety
- ▶ Service scope
- ▶ GHG emissions
- ▶ Data collection
- ▶ Convenience
- ▶ Cleanliness
- ▶ Efficiency



CHALLENGES

- ▶ Collection vehicles
 - ✓ split-load
 - ✓ maintenance
 - ✓ slow-fill CNG





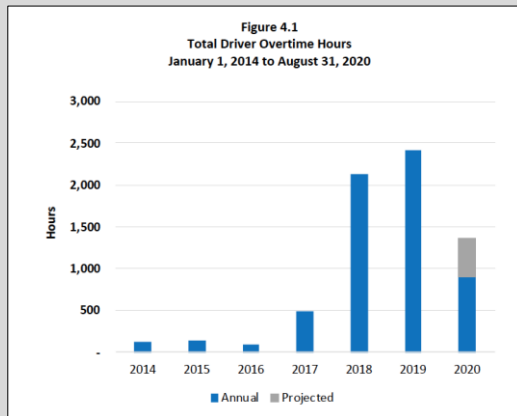
CHALLENGES

- ▶ Collection drivers
 - ✓ considerable pride in work; *esprit de corps*



CHALLENGES

- ▶ Collection drivers
 - ✓ overtime
 - ✓ driver training





CHALLENGES

- ▶ Collection carts
 - ✓ administrative assistance needed



CHALLENGES

- ▶ Resident education
 - ✓ cart hold-backs





CHALLENGES

- ▶ Resident education
 - ✓ cart placement



CHALLENGES

- ▶ Resident education
 - ✓ cardboard volumes
 - ✓ contamination





CHALLENGES

- ▶ Resident education
 - ✓ cardboard volumes
 - ✓ contamination
 - ✓ demand management



RECOMMENDATIONS

- ▶ Recommendations
 - ✓ 2021 fiscal year
 - ✓ beyond 2021

**CHAPTER 5
RECOMMENDATIONS TO CONSIDER**

The City of Nanaimo has made a considerable investment in its automated curbside collection service. The service provides many benefits to City workers, the municipal corporation, households that use the system, and the broader community. The service also, however, faces a number of challenges that, left unaddressed, may undermine the success of the service and its long-term sustainability.

This final chapter of the Draft Report presents a series of recommendations that are designed to build on the service's benefits and address its challenges. The recommendations are divided into two groups beginning with recommendations to consider for implementation in 2021. These recommendations, if accepted, will have budget implications for the coming fiscal year. The second group of recommendations includes those to consider for action beyond 2021.

RECOMMENDATIONS FOR 2021

Route Optimization

The City's Location Division is struggling with its current resources to maintain curbside collection service levels in the face of significant growth in household organics, garbage and recyclables. Additional resources are needed to help the service meet demand without relying on significant amounts of overtime labour. Additional resources should not be added, however, until the existing network of collection routes is re-optimized – or, optimized – to achieve greater efficiency.

Optimized collection routes on a system with split-load vehicles are those that can be completed by a single truck, within an eight-hour work shift that allows time for mandatory breaks, trips to disposal/recycling facilities, refueling stops, and pre- and post-shift vehicle inspections. Optimized routes are designed based on all of the following data points:

- the volume of different waste streams to be collected
- the number of households
- user participation rates
- the age of collection vehicles (vehicles purchased for three or less of the implementation have eleven hydraulic lift arms than the vehicles bought for three or more)
- the total driving distance to visit their disposal facilities
- the driving distance to and from the Public Works Yard

The City has ten years' worth of data from on-board computers and other sources with which to perform route optimization. City staff have used these data to suggest modifying the system into ten separate collection zones, each of which would feature five separate garbage/organics collection routes, and six separate

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CONSULTANTS

OPTIONAL
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RECOMMENDATIONS

- Route Optimization
 - ✓ maximize capacity given fleet, labour, shift constraints, volumes of material, household numbers, participation, driving distances
 - ✓ minimize need for additional vehicles, labour, overtime, tipping



RECOMMENDATIONS

- Route Optimization
 - ✓ City has collected and analyzed two years' of data
 - ✓ proposed route configuration and number make sense





RECOMMENDATIONS

- ▶ *THAT Council endorse the ten-zone route optimization proposal developed by staff for implementation in January, 2021*
- ▶ *THAT Council direct staff to advance the hiring of an additional Refuse Collector/Operator (1.0 FTE) from July, 2022, to January, 2021*



RECOMMENDATIONS

- ▶ **Cart Management**
 - ✓ all municipalities have realized the need for ongoing cart management





RECOMMENDATIONS

- ▶ *THAT Council direct staff to create an administrative position (0.5 FTE) to manage the collection cart inventory.*



RECOMMENDATIONS

- ▶ Driver Training
 - ✓ some training done already; some ongoing
 - ✓ further targeted training would be helpful to address range of needs





RECOMMENDATIONS

- ▶ *THAT the City develop and provide targeted training to Refuse Collector/Operators on a variety of topics, including:*
 - ✓ *the proper use of the collection vehicles' on-board computers to bolster the City's data collection efforts*
 - ✓ *the proper operation of the vehicles to reduce wear-and-tear, and to better manage vehicle repair and maintenance costs*
 - ✓ *the inspection of vehicles at the end of each shift to identify issues for mechanics to address prior to the start of the next shift*



RECOMMENDATIONS

- ▶ *THAT Council direct staff to add one non-collection day to the collection schedule each year to allow for Refuse Collector/Operator training.*



RECOMMENDATIONS

- ▶ Data Collection
 - ✓ good data collection is critical to system efficiency



RECOMMENDATIONS

- ▶ *THAT Council direct staff to purchase and install an on-board computer for Truck 317.*



RECOMMENDATIONS

- ▶ Resident education
 - ✓ residents have a big role to play in making the system work, and making the service efficient



RECOMMENDATIONS

- ▶ *THAT the City develop and provide targeted education and information resources to guide residents in:*
 - ✓ *determining when to hold-back carts until the following collection day*
 - ✓ *placing carts for pick-up*
 - ✓ *preparing cardboard for collection*
 - ✓ *reducing contamination for collection*
 - ✓ *reducing the amount of household waste generated*



BEYOND 2021

- ▶ *THAT the City examine the potential to diversify its collection fleet by including single-load vehicles in future years, either in addition to or in place of end-of-life spit-load vehicles, for the collection of high-volume streams such as recycling.*
- ▶ *THAT the City use a seven-year amortization period in its capital planning for new collection vehicles.*
- ▶ *THAT the City incorporate into its future re-design of the Public Works Yard a fleets facility that can accommodate the City's CNG collection vehicles.*



BEYOND 2021

- ▶ *THAT the City incorporate into its future re-design of the Public Works Yard a slow-fill CNG fueling facility with sufficient capacity to fuel the City's entire CNG collection fleet.*
- ▶ *THAT the City explore the potential to alter shift times for vehicle mechanics to enable collection vehicles to be consistently maintained and repaired outside of collection times.*



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POST-IMPLEMENTATION REVIEW
