

Organics Case Study 4: Waste Recycling – Single-family Residential Collection Program, Kitchen Scraps Only

Regional District of Nanaimo Green Bin Program

Regional District of Nanaimo, BC



Population: 151,508

Land Area: 2,038.1 km²

Population Density: 71.9 persons/km²

Median Age: 49.3

Housing Mix – SF/MF – 86:14

**2012 Regional District Disposal Rate:
350 kg/capita/year**

Program Highlights / Summary

The RDN Zero Waste Plan identifies organics diversion as the primary means to reach the goal of 75% diversion from landfill. Commercial and residential food waste diversion programs are essential to achieving this target. The Green Bin Program, a partnership of the RDN and its member municipalities, provides collection service to 53,500 single-family households throughout the region, including urban and rural residents.

In 2012, the program collected 6,247 tonnes of kitchen scraps from 53,500 households. This represents 117 kg of food scraps per household or 43% reduction in waste sent to disposal. This equates to a diversion rate of 60%, which is more than double the pre-program diversion rate. However, based on a conservative estimate for self-haul yard waste from single-family residences of 150 kg annually, the residential diversion rate would be roughly 70% if this material was collected at the curb.

With respect to total waste disposal, in 2012 the RDN Green Bin Program diverted 42 kg per capita from landfill, contributing to a region-wide disposal rate of 350 kg per capita of which only 61 kg or 17% of total waste disposed come from households participating in the Green Bin Program. The program also reduced greenhouse gas emissions by 6,081 tonnes CO₂e.

Program Details

Organics Diversion Strategy

The Organics Diversion Strategy (ODS) was approved by the RDN Board in February 2005 to provide the general public and the business community with information on how and when residential and commercial organic waste would be diverted from disposal. The ODS was developed in accordance with the RDN Zero Waste Plan which identifies organics diversion as the primary means to reach the goal of 75% diversion from landfill by 2010.



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Under the ODS, commercial food waste diversion was the first priority. This material was banned from disposal in June 2005 to support the establishment of a privately owned and operated in-vessel composting facility in the region. With this infrastructure in place, the second priority was diversion of organic waste from the residential sector. In accordance with the ODS, program development included a study on residential diversion programs in other jurisdictions followed by a pilot project to determine the best program option for the RDN.

Residential Organics Collection Study

In 2005 the RDN engaged consultants to conduct a study on the collection of compostable waste from the residential sector. Given that yard waste was not included in RDN residential collection programs, this study reviewed four different collection options: yard waste collection only; food waste collection only; food with yard waste combined (single stream); and food and yard waste collected separately.

The report indicated that there were a number of difficulties associated with curbside collection of yard waste including a significant increase in the amount of curbside material to be managed; reduced incentives for backyard composting and yard waste reduction initiatives and increased cost. Since yard waste drop-off programs were already achieving significant diversion, staff concluded that food waste only collection provided the most cost-effective option (\$5 per household per year compared to \$46 to \$69 per household to include yard waste collection at the curb).



Pilot Program

Based on the results of the residential organics collection study, RDN staff designed a 12 month field test for 1,985 households on three collection routes – an urban route, a suburban route and a rural route. The routes provided a broad range of housing types ranging from rural acreage properties to dense subdivisions .

Under the pilot, food waste was collected weekly while garbage and recycling were collected on alternating weeks using a split packer truck. Two separate containers were provided to each participating residence: a lidded kitchen catcher and a 46 litre green bin curbside container. Compostable bin liners were initially provided to residents for the kitchen catcher and green bin to reduce the “yuck factor”, however, after the initial distribution residents were expected to purchase their own compostable liners or use other options which included no liners at all or paper bags and newspaper. The pilot program cost roughly \$170,000 with 50% of program costs funded by grant from the Federation of Canadian Municipalities (FCM).

The pilot program was extremely successful with a household participation rate of more than 75%. Even more impressive was the weekly food waste set out weight. While the study had estimated a set out weight of 1.7 kg per week per household, under the pilot set out weights were 2.45 kg per week on the urban route, 2.43 kg per week on the suburban route and 2.0 kg per week on the rural route. This equated to an overall residential diversion rate of 55% on the rural route and 68% on the urban and suburban routes. Based on these results, the RDN and its member municipalities agreed to add food waste collection to existing curbside garbage and recycling programs in both rural and urban / suburban areas.

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Region-Wide Collection Program

Of the 53,500 single family homes in the region serviced with curbside collection, 27,600 are located in RDN electoral areas and partnering municipalities of Lantzville, Parksville and Qualicum Beach. The City of Nanaimo provides service to the remaining 25,900 homes within their municipality. The RDN program (27,600 households) was implemented in October 2010 while the City of Nanaimo program was implemented in two phases – October 2010 and October 2011. In both programs, kitchen scraps are collected weekly in split-body packers with recyclables and garbage collected on alternating weeks. Yard waste is not collected at the curb.

Residents store their kitchen scraps in kitchen containers and 46-litre RDN-supplied green bins prior to setting out at the curb for weekly collection. Although kitchen containers were provided as a courtesy to residents when the green bins were originally delivered in 2010-11, their use is currently optional and broken or damaged kitchen containers are not being replaced. Instead, the RDN provides residents with information on kitchen container models available at local retailers or on-line as well as alternative reuse options such as an old ice cream pail or a Kraft paper bag.

Residents have the choice to line their kitchen container or green bin with certified compostable bags, paper-based products, newspaper, or placed loose in the green bin. Non-compostable plastics such as plastic grocery bags as well as plastic bags labeled as “biodegradable”, “degradable” or “oxo-degradable” are not accepted in the green bin. Compliance relies on resident awareness, backed up by observations of collection staff. Use of non-compliant bags (e.g. plastic shopping bags) results in food waste being left behind with a sticker explaining the reason. The RDN website provides residents with a list of retailers with the RDN that carry compostable bags as well as a list of compostable bag brands.

Processing

Kitchen scraps are processed at a privately owned and operated in-vessel composting facility where kitchen scraps are mixed with other organic material including ground up yard and garden waste delivered by residents and business to public and private drop-off facilities throughout the region which is then transferred to the composting facility.

Promotion / Education

Staff used the information gained from the pilot program to design the communications strategy for the region-wide “Green Bin” program. One of the most common comments heard from participants at the beginning of the pilot program was that they were already composting and consequently didn’t need the green bin. However once they got started, they realized that the Green Bin program accepted materials that couldn’t go into a backyard composter (e.g., meat, dairy, grains) and became converts to the program.



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As a result of this feedback, a multi-faceted communications strategy was developed which re-branded the existing Zero Waste logo to “Zero Waste – Beyond Composting”, incorporating the tag line “Beans to Bones in the Bin” to demonstrate that this program involved more than vegetable peelings and coffee grounds. Communication included a new web presence, ads on buses, media ads, attendance at community events, and hosting open houses in the four weeks prior to program launch.

Green bins and start-up kits were also delivered to households prior to program launch. Inside the bins were new collection schedules, a new curbside collection guide for garbage, recycling and the green bin program, decals listing acceptable / unacceptable materials, a fridge magnet and a small kitchen container with sample liner bags.

Supporting Policies and Regulations

The RDN Garbage, Recycling and Green Bin program is funded through user fees and not property taxes. Since the introduction of curbside recycling in 1991, the Regional Program enforced can limits and required the purchase of tags for extra garbage cans. Prior to the introduction of the Green Bin, households could set out one 100-litre can of garbage weekly. Tags at a cost of \$2.00 each had to be purchased to allow for up to two additional cans. Currently, households are allowed to set out one can of garbage every other week, with tags required for up to two additional cans. This hybrid pay-as-you-throw system supports recycling and food waste diversion efforts by residents.

The RDN Waste Stream Management Licensing Bylaw also supported the Green Bin Program by encouraging the establishment of a privately owned and operated in-vessel composting facility in the region.

Program Results

Financial Data

Recognizing that the Green Bin Program would conserve valuable landfill capacity, the RDN chose to use landfill reserve funds to purchase green bins. In 2010, the RDN awarded a contract for the supply and distribution of 55,000 kitchen containers and green bins to Orbis Canada for a total cost of \$1,367,135 or \$25.23 per unit (kitchen catcher and green bin). These units were distributed free of charge to residents for the initial program launch, however new customers are currently required to purchase their containers from the RDN or City of Nanaimo.

With respect to capital costs associated with curbside collection vehicles, as the RDN program is delivered under contract, an RFP was issued that required contractors to purchase new split packer trucks, the cost of which was included in the annual contract collection fee. The City of Nanaimo, on the other hand, purchased new split packer trucks over two years in accordance with their vehicle replacement schedule. These costs were amortized and recovered through user fees.



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In 2012, the annual user fee for the RDN curbside garbage, recycling and green bin collection program was \$134 per household, while the user fee for the City of Nanaimo was \$120 per household. For the program launch, which was phased-in between 2010 and 2011, the RDN hired two temporary staff to assist with communication and outreach activities; however by 2012 both the RDN and the City of Nanaimo were managing the program using pre-program staffing levels.

Environmental

Following the pilot program, RDN staff projected that 6,000 tonnes of kitchen scraps would be collected annually from serviced households throughout the region. In 2012, the program collected 6,247 tonnes of kitchen scraps from 53,500 households. This represents 117 kg of food waste per household or 43% reduction in waste sent to disposal. This equates to a diversion rate of 60%, which is more than double the pre-program diversion rate. However, based on a conservative estimate for self-haul yard waste from single-family residences of 150 kg annually, the residential diversion rate would be roughly 70% if this material was collected at the curb.



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Social

The implementation of region-wide residential food waste collection was strongly supported by politicians and the community. The approval process began with the adoption of the Zero Waste Plan in 2004, the Organic Diversion Strategy in 2005, the Commercial Food Waste Ban in 2006, and the residential collection pilot program which began in 2007. This planning, policy, program design and implementation process fostered community awareness and acceptance that has contributed to program success.

The Green Bin program has contributed to the region's sustainability by encouraging residents to reduce the amount of waste they send to landfill, thereby saving expensive landfill capacity as well as reducing greenhouse gas emissions. In addition the local economy benefits from the private food waste processing facility employing people, investing in the area, and producing compost and soil amendments.

Lessons Learned

- The RDN Green Bin Program benefited from a phased implementation process that went from plan, to strategy to pilot program to full program delivery.
- Although food waste collection programs were not new, undertaking a pilot program provided valuable input to the final program design, ensuring a successful launch.
- A collaborative delivery model ensured buy-in from member municipalities.

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- The introduction of food waste collection provided an opportunity to change up recycling collection – move from three stream source-separated to single stream collection. At the same time remove household glass from recycling (negative market, no local recycling options, not compatible with single stream collection). Food waste collection also allowed garbage collection to change from one can weekly to one can every other week.

Communities with Similar Programs

- Ladysmith
- Victoria
- Duncan
- North Cowichan
- View Royal
- Saanich



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BeyondComposting

