

The Rocket – Multi-Family, On-Site Composting at Malaspina Village, Coquitlam

City of Coquitlam in Metro Vancouver, BC



Photo credit: Vancouver Sun

Population: 2,451,783
(Metro Vancouver, BC Stats 2013)

Land Area: 2,882.55 km²

Density: 802.5 persons/km²

Median Age: 40.2

Housing Mix – SF/MF – 60:40

Average persons per household: 2.6

2012 Regional District (Metro Vancouver)

Disposal Rate:
561 kg/capita/year

Program Highlights / Summary

In an effort to increase organics diversion and reduce waste-hauling costs in the multi-family sector, Metro Vancouver is currently piloting a fully automated, on-site composting system called The Rocket. Malaspina Village, a 67-unit Coquitlam townhouse complex, is the first Metro Vancouver affordable-housing facility (and the first site in Western Canada) to obtain an on-site composting unit. The Rocket is manufactured in Europe and distributed by a Toronto firm. Residents are using the device to compost their kitchen scraps. A 5-year payback period is expected, due to reduced waste-hauling costs from the site. All finished material will be used in community allotment gardens and for landscaping around the complex itself.

The MV Integrated Solid Waste and Resource Management Plan sets out a course of action to increase diversion rates. MV's goal is to achieve an overall 70 % composting and recycling rate by 2015, and an 80% waste diversion rate by 2020. Diverting compostable organics is a priority to meet the target for a total ban of organic waste from the landfill by 2015.

The composting system is performing well and introduces a viable solution for other multi-family complexes currently requiring private waste collection. The Rocket technology / unit is also highly transferable to the ICI sector (e.g., hospitals, universities, sporting facilities, schools, and care facilities). This pilot project demonstrates that on-site composting can serve as part of an integrated solution for diverting organics from the waste stream.

Organics Case Study 10: Waste Recycling – Multi-family Residential Kitchen Scraps Collection Program

Program Details

Collection

Residents who have completed training on acceptable composting materials are given keys to one side of the compound area containing three green toters (10 gallon bins). They use kitchen catchers to bring organics to the bins. The other side of the compound enclosure holds The Rocket and only the complex housing manager and weekend resident volunteer have access to the vessel itself. The site manager empties the green bins daily (resident volunteer on weekends), mixing buckets of food scraps with wood chips (provided by a local arborist) in a 50:50 ratio. The automated composter can process approximately 20 kilograms of mixed organic materials, including meat products, vegetable wastes and food soiled paper per day. Material is screened prior to being added to The Rocket to ensure that plastic, tin foil and other contaminants are removed. Pre-screening also removes large food items (whole oranges, avocado pits or pineapple tops). These require cutting up to break down properly.

Processing

Material makes its way through the unit in 14 days, after which, it is transferred into garbage cans (they have 8 in the compound) to cure for 4 additional weeks. Food scraps, which have not completely broken down, are fed back into the unit a second time. The unit has an automatic auger mixing and advancing the material 4 times/day (materials do not have to be rotated manually). A heating element in the vessel ensures optimal temperature to promote microbial activity. After 6 weeks, the finished product can be used un-sifted as mulch on landscaped areas, but the preferred use is to screen it before using it in planter boxes and community allotment gardens.

Promotion / Education

Metro Vancouver (MV) staff began operating The Rocket in June 2013. A Grand Opening ceremony was held in September once operational details were established. Participation in the project has been voluntary to date, with mini tours and educational sessions being given to any residents interested in the project.

See Grand Opening video demonstration of The Rocket at Malaspina Village:
<http://bit.ly/MalaspinaRocket>

What to feed THE ROCKET?

ALL FOOD SCRAPS!
(chopped in small pieces)

- ✓ Fruits and veggies - cooked or raw
- ✓ Pizza crusts, bread, pasta, cereals, rice
- ✓ Meat, fish, poultry
- ✓ Small bones (chicken, fish)
- ✓ Egg shells, cheese
- ✓ Coffee grounds & filters, tea

Food Scraps are fed to **THE ROCKET** and after six weeks we will have rich compost for the gardens!

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Supporting Policies and Regulations

MV has the following goals and commitments for sustainability and livability in the region:

- The MV Integrated Solid Waste and Resource Management Plan sets out a course of action to move beyond the current 55% diversion rate, setting a new interim target of 70% by 2015, and an 80% waste diversion rate by 2020. Diverting compostable organics is a priority to meet the target for a total ban of organic waste from the landfill by 2015.
- The MV Sustainable Region Initiative commits to managing its waste within the region as a significant factor in creating a sustainable future. The Regional Food System Strategy (2011) sees a two-fold benefit to reducing organic waste. Once composted, food scraps, yard waste and soiled paper are transformed into a valuable source of natural soil amendment that can be used by urban farmers and community gardeners to help to strengthen the community food system.

Program Results

Financial Data

Capital Costs

The capital cost of the Rocket pilot project was \$30,000. The unit itself cost \$22,000 with the remainder used for installation and construction of the compound to house the system. The compound at Malaspina is covered by a roof and surrounded by a chain link fence that can be locked to prevent vandalism and restrict public access. A large 12' x 16' wooden shed might be a cost effective solution in other locations.

Operating Costs

There are minor operating costs associated with the composting facility. Garbage bins used for curing and green bins for storing resident material will require replacement along with cleaning supplies and hand tools (shovels, pitchforks). Estimated cost: less than \$100/yr. Hydro requirements for the largest unit (capacity >20,000 kg/yr) = 156 kwh/month.

Staffing Implications

The building manager looks after unit Monday to Friday, and a resident volunteer does the same on weekends. The staff member 'feeds' the unit, keeps the area clean, conducts minor maintenance, disposes of leachate and cleans the machine as it is exposed to weather. This person should be compost savvy to be able to tell if product looks right (i.e. enough 'brown' input). No additional staffing was provided / budgeted for. The operation and maintenance of the unit is integrated into the existing job of the facility's building manager (who is MV paid staff). All compost is used on site at Malaspina. If the site had no garden or landscaped areas to apply the finished product, then a partner would be required to remove the finished product.

Cost Recovery

Metro Vancouver expects The Rocket project will pay for itself (\$30,000 including installation and construction) within four to five years through waste hauling and landscape savings.



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Environmental

Reduction and Diversion

Metro Vancouver's goal is to achieve an overall 70 % composting and recycling rate by 2015, and an 80% waste diversion rate by 2020. The current composting and recycling rate for single-family dwellings is 57%. Multi-family dwellings are estimated to be at a much lower rate of 27% (Metro Vancouver Recycling and Solid Waste Management – 2012 Summary). The 10 kg of food scraps processed per day at this 67 unit complex translates to a removal of 3,650 kg/yr (3.65 tonnes) of organics removed from the waste stream in one year alone.

Disposal Impact / Landfill Space Savings

The Rocket at Malaspina processes an average of 20 kg per day of food scraps, however, given the 50:50 mix with wood chips, only 10 kg per day of organics are being processed with the current unit (3,650 kg/yr). Once the 2015 organics ban takes place, it is estimated that a capacity of 40 kg per day will be required, with 20 kg of this being resident food scraps. After one year of operation, a review of the pilot program will determine if MV will move to a larger unit size. The manufacturer of The Rocket (MASS Environmental Services) produces composting units in two sizes. The next size up costs \$34,000 and is able to accept 3x the capacity of organics.

Pre-program Per Capita Waste Disposal Rate: 230 kg/capita/year

Current Per Capita Waste Disposal Rate: 209 kg/capita/year (*within project population only)

GHG Reduction

Ten kg of food scraps processed per day translates to a removal of 3,650 kg/yr (3.65 tonnes) of organics removed from the waste stream in one year alone.

2013 GHG reduction* = 2.0 CO₂e diverted

(Diverting 3.65 tonnes of organics annually from landfill.)

*annual estimated as case study program initiated June 2013

Social

Political Acceptability

Metro Vancouver has about 10,000 residents living in multi-family, affordable housing dwellings. The success of The Rocket at Malaspina will be evaluated before considering on-site composting at other housing sites. Malcolm Brodie, Chairman of Metro Vancouver's Zero Waste Committee was quoted as stating he believes The Rocket is one strategy that will help Metro Vancouver achieve better waste-reduction rates along with regional-scale food scraps collection at the curbside and backyard composting.

Community / User Acceptability

Currently, half of the 67 housing units are participating in the composting program. This is considered positive engagement, given that Malaspina is a social housing complex, comprised of low to mid-income families and seniors (a mixed income community with households from various backgrounds).

Community Economic Development

The pilot project provides volunteer experience to at least one resident. The composted material provides a free growing medium for resident gardens and landscaped areas on site.

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Lessons Learned

Metro Vancouver had specific priorities when creating The Rocket's compound at the housing complex. It could look quite different for a co-op or restaurant. Because this is social housing, every effort was made to engage the residents. The compound was made to look very appealing. Because the unit is not enclosed it does get 'weathered'. At other locations, a 12 x 16 toolshed would likely work just as well.

Although the one-year pilot is still in progress, staff have already realized the unit is too small. They have reached capacity with only 50% resident participation. Staff underestimated the amount of material available (it had been based on the centralized pickup of garbage). The trial has helped to accurately determine the average mass that the Rocket can process in a day. The Rocket's capacity is more about volume of material fed at any one time than it is about the weight of the material. Only a handful of plastics have required removal from the pre-screened and post-composted material. The lack of contaminants in the finished product is a testament to the importance of good messaging and training sessions.

Communities with Similar Programs

The Rocket A900 (a larger unit which can accommodate 250 households) is being used at Lakefield College, Lakefield, Ontario.

According to the Canadian distributor, MASS Environmental Services, The Rocket is a global technology with units in operation "all over the world". For more details, visit www.massenv.com.

Program Contact

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We recycle our food scraps!



BY 2015 FOOD SCRAPS WILL HAVE TO BE SEPARATED FROM THE GARBAGE. Malaspina Village residents are heading the way by piloting this composting system. Keeping our food scraps on site keeps trucks off the road and food waste out of the landfill.



The finished compost is used to grow vegetables and flowers in the community gardens and for the landscaped areas at our complex.

A PARTNERSHIP BETWEEN MALASPINA VILLAGE (MVHC) AND METRO VANCOUVER.

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