

## Vancouver Voluntary Advanced Deconstruction Permit

City of Vancouver in Metro Vancouver, BC



Population<sup>1</sup>: 640,915 (2013)

Land Area<sup>2</sup>: 114.97 km<sup>2</sup>

Density<sup>2</sup>: 5,249.1 persons/km<sup>2</sup>

Median Age<sup>2</sup>: 39.7

Housing Mix<sup>2</sup> – Single:Multi-Family – 40:60

Average persons per household<sup>2</sup>: 2.2

2012 Metro Vancouver Regional District disposal rate<sup>3</sup>:  
561 kg MSW per capita (all sectors)

### Program Highlights / Summary

To become the greenest city in the world, employees at the City of Vancouver are working with Council, residents, businesses, other organizations, and all levels of government to implement the Greenest City 2020 Action Plan. The practice of deconstruction in Vancouver is an integral part of their Action Plan to divert waste, promote reuse of materials, and create “green jobs”.

About 900 homes are demolished in Vancouver each year. Staff estimates that one and two family home demolitions are the single largest source of wood waste generated, and have lower diversion rates than larger buildings. Prior to the establishments of the voluntary advanced deconstruction permit, the development permitting process for one and two family homes included no incentive for contractors to take the time necessary to remove the home through deconstruction.

Now, a building permit for deconstruction can be obtained prior to issuance of a development permit, providing the applicant demonstrates intent to undertake deconstruction. The applicant must commit to completing a compliance report detailing diversion rates, provide copies of receipts from receiving facilities and apply for a development permit. The City defines deconstruction as: “systematic disassembly of a building resulting in the reuse, recycling or recovery of not less than 75% of all building materials, excluding materials which are hazardous or banned from landfill.” (July 2011 Environment Policy Report to City Council)

Within the first two years of implementing the advanced permit process, 12 deconstruction permits were issued, with reported diversion rates ranging from 86%–91% per deconstruction project.

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<sup>1</sup> BC Stats data (<http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx>)

<sup>2</sup> Statistics Canada census data  
(<http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E&MM>)

<sup>3</sup> Environmental Reporting BC  
([http://www.env.gov.bc.ca/soe/indicators/waste/municipal\\_solid\\_waste.html?WT.ac=LU\\_Municipal-Waste](http://www.env.gov.bc.ca/soe/indicators/waste/municipal_solid_waste.html?WT.ac=LU_Municipal-Waste))

### Program Details

On average, 900 homes are demolished in Vancouver each year. As a first step to encouraging deconstruction in Vancouver, staff focussed on facilitating deconstruction in the one and two family home sector. Staff estimates that one and two family home demolitions are the single largest source of wood waste generated, and that these demolitions have a lower diversion rate than larger commercial and industrial buildings. Prior to the establishment of the voluntary advanced deconstruction permit, the development permitting process for one and two family homes included no incentive for contractors to take the time necessary to demolish by deconstruction.

In July 2011, Council approved the implementation of a voluntary advanced permit for deconstruction, setting a waste diversion target of 75% for each project.

Previously, Vancouver's Zoning and Development Bylaw required that demolition permits be issued simultaneously with building permits for one and two family homes. Bylaw amendments were introduced to 'de-couple' the demolition permit from the building permit in cases where an applicant opts to demolish by deconstruction prior to building a new house. The purpose of this 'de-coupling' of permits was to counterbalance a developer's inclination to finish demolition as quickly as possible in order to begin construction sooner. The new process provides an incentive to deconstruct, as those who deconstruct have the advantage of starting new construction (having already cleared their site) as soon as their building permit is issued.

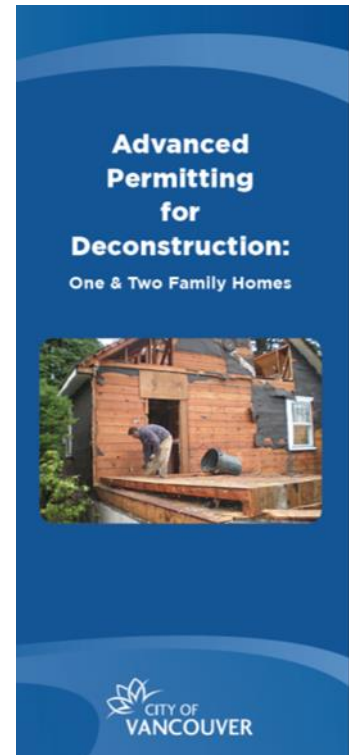
Permit holders are asked to complete a tracking form at project completion and provide copies of receipts detailing materials reused, recycled and landfilled (not including any hazardous materials identified). The permit process also provides two incentives designed to overcome perceived barriers to market uptake: a 50% discount on the disposal of residuals from deconstruction at the Vancouver Landfill (for contractors holding the permit), and early release of the permit to deconstruct (amounting to a two-week construction scheduling advantage).

### Supporting Policies

The main supporting policy is the approved Greenest City 2020 Action Plan, developed in 2011, which includes the following goals:

- Lead the world in green building design and construction,
- Create zero waste (70% diversion by 2015), and
- Foster a green economy (double the number of green jobs, double the number of businesses engaged in greening their operations).

The Action Plan also includes "developing policy and incentives to encourage deconstruction for renovation and demolition projects" as a high priority action.



### Program Results

#### Financial Data

##### Capital Costs

There are no capital costs associated with this program.

##### Operating Costs

There are no new operating costs associated with the adoption of this permit.

##### Staffing Implications

No additional staff were allocated to the implementation of this initiative.

##### Cost Recovery

Cost recovery is done through the permit fee. The fee is the same as for conventional demolition projects.

#### Environmental

##### Reduction and Diversion

Prior to the introduction of the deconstruction permit, the City supported a pilot program tracking the deconstruction of two single-family houses. The pilot study showed a 93% diversion rate for each house.

Within the first two years of permit implementation, 12 deconstruction permits were issued (4 in 2012, 8 in 2013). In 2012, the reported diversion rates ranged from 86%–91%, with an average of 200 tonnes diverted per house. This represents an increase of 100 tonnes over a typical house demolition (2000 ft<sup>2</sup>). Note that these diversion numbers include the weight of the building's foundation.



##### Disposal Impact / Landfill Space Savings

Metro Vancouver intends to implement a disposal ban on clean wood waste in 2015. This includes banning the disposal of clean wood waste at the Vancouver South Transfer Station and the Vancouver Landfill. MV's target for 2015 is to divert 155,000 tonnes of building materials, primarily wood waste, beyond what is currently recycled. That represents about 10% of the CR&D waste expected to be generated in 2015. The promotion of deconstruction over demolition is expected to support Metro Vancouver's target.

##### GHG Reduction

Not calculated, however deconstruction is reported to reduce greenhouse gas emissions because the re-use of building materials diminishes the need for extraction of resources, manufacturing and transport of building materials made from virgin materials.



### Social

#### Political Acceptability

The City Manager recommended approval to “Advancing Deconstruction in Vancouver and Supporting By-Law Amendments” recognizing that deconstruction will support two of Council’s key priorities from ‘The Greenest City 2020 Action Plan’ – to achieve zero waste and foster a green economy.

#### Community / User Acceptability

The Greenest City 2020 Action Plan was based on a dialogue held with residents and organisations across the city about their vision and expectations of what would make Vancouver the Greenest City. Deconstruction was an approach identified through this engagement process.

#### Community Economic Development

Reflecting its overall sustainability goals, the Greenest City 2020 Action Plan aims to create a diversity of green job types that will contribute to a stronger local, green economy. The City hopes to create a local deconstruction industry. The City’s deconstruction pilot projects involved a job training exercise in partnership with a local non-profit group, resulting in the training of two crews of 20 youth with barriers to employment.

City Council have directed staff to work with non-profit partners to examine the viability of creating a deconstruction centre. The deconstruction centre would offer training and resources to industry, as well as provide a storage facility and a materials processing centre. The purpose of the centre would also be to build capacity, facilitate the growth of deconstruction as a mainstream practice in Vancouver, create new ‘green’ jobs, and further develop the market for used building materials. Initial feasibility investigations for this facility suggested that additional development of the deconstruction market is required in order to support implementation.

### Lessons Learned

The City first established a working group to explore strategies to encourage diversion and deconstruction, leading to two deconstruction pilot projects in 2011. Although the pilots demonstrated that almost 93% of the demolition material from a house could be diverted from landfill, time and cost were also identified as significant barriers to deconstruction. Development and implementation of the voluntary advanced permit for deconstruction was intended to address these barriers.

After two years of the voluntary program being in effect, there has been very modest uptake of the Advanced Permit for Deconstruction of One and Two Family Homes. However, reports back from contractors suggest that meeting the diversion requirements associated with deconstruction are not overly challenging to meet.

The development of the voluntary approach to deconstruction allowed the city to develop capacity and processes to administer deconstruction.

Because the benefits of the program are consistent with the City’s waste reduction objectives, recent community plans have included policy requirements



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supporting deconstruction for all rezoning applications in these community plan areas. This movement to more firm requirements to deconstruct (in certain areas of the city) will lead to far more demolition materials being diverted from landfill.

Consistent with the “5Rs” approach to waste management (reduce, reuse, recycle, recovery, residuals management), staff may also consider the inclusion of a mandatory reuse threshold (5 or 10%) as a means of encouraging salvage and reuse as the primary objective of deconstruction – this could apply to a wide variety of construction elements including: intact windows, doors, wooden moldings and floors.

Communications, educational material and process refinement for the deconstruction program will continue to be developed with an aim to targeting builders, home owners and possibly architects willing to act as community leaders in this field. Staff will continue their efforts to promote and develop deconstruction in Vancouver with the immediate focus on supporting:

1. Training programs to build contractor capacity to provide deconstruction services
2. Market development for used materials

Deconstruction is an emerging area where more capacity needs to be built within the ranks of demolition contractors. Training workers in specific deconstruction techniques is available in the Cascadia region (BC, Washington, Oregon). More work in this area is required in order to realize the potential waste reduction opportunity. Also, further refinement of specific deconstruction techniques is warranted to confirm whether a hybrid deconstruction approach makes the most economic sense, where a building is partially deconstructed manually, and partially by machine.

### Communities with Similar Programs

- City of Seattle – [www.seattle.gov](http://www.seattle.gov)  
(they require a diversion minimum threshold of 20% by reuse and 50% by recycling)  
<https://www.seattle.gov/dpd/permits/permittypes/residentialdeconstruction/default.htm>

### Program Contact

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