



ADMINISTRATIVE REPORT

Report Date: November 16, 2015
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Meeting Date: December 16, 2015

TO: Standing Committee on City Finance and Services
FROM: General Manager of Engineering Services
SUBJECT: Green Demolition Program Update

RECOMMENDATION

- A. THAT Council receive the following report for information regarding the results of the City's green demolition program to date.
- B. THAT Council approve, in principle, the proposed amendments to the Green Demolition By-law No. 11023, as generally set out in Appendix A, to provide greater incentive for salvage and reuse, to offset program costs through a non-refundable fee of \$350, and to reduce the current refundable security deposit by the same amount to \$14,650.
- C. THAT Council instructs the Director of Legal Services to bring forward the proposed amendments set out in Appendix A for enactment.
- D. THAT Council endorses the expansion of the green demolition program to:
 - i. apply to pre-1950 one- and two-family homes as of January 1, 2017;
 - ii. apply to all one- and two-family homes as of January 1, 2018;

and instructs the Director of Legal Services to bring forward the proposed amendments in a timely manner.

REPORT SUMMARY

The recommendations in this report respond to the Heritage Action Plan, the Zero Waste objectives of the Greenest City 2020 Action Plan and Metro Vancouver's Integrated Solid Waste & Resource Management Plan (ISWRMP). These plans aim to encourage preservation and renewal of character homes, increase reuse and recycling of demolition materials, reduce greenhouse gases and generally reduce the amount of construction and demolition waste disposed to landfill and incinerator.

In June 2014, Council approved recommendations that established reuse and recycling requirements for demolition waste from pre-1940 one- and two-family homes (minimum recycling and reuse rate of 75%, and 90% for pre-1940 homes that are deemed character by the City). At that time Council directed staff to report back regarding the effectiveness of the requirements and if appropriate, bring forward recommendations for further implementation for construction and demolition waste reuse and recycling requirements. This report responds to that request.

The Green Demolition By-law came into effect on September 1, 2014. Since that time, there have been 264 pre-1940 homes demolished that were subject to the by-law requirements (as of November 15, 2015). An additional 32 homes were demolished as part of rezoning applications in the Cambie Corridor Plan area, which were also required to meet the minimum 75% diversion target. The average diversion rate of demolition waste from these homes has been 87%. This is significantly higher than the typical rate of 50% for residential demolitions. Overall compliance with the by-law has been high, with approximately 98% of applicants meeting the requirements. As a result, an additional 9,000 tonnes of materials have been diverted from landfill and incinerator, and roughly 3,000 tonnes of greenhouse gases (GHGs) have been avoided by not landfilling the wood waste.

Since implementing the by-law, staff have held six workshops and meetings with demolition contractors and salvage/recycling facility operators. The meetings were used to raise awareness, provide training, and solicit feedback. In general, the demolition industry is supportive of the green demolition program. Contractors indicated that they are satisfied with the compliance reporting process but expressed concern with the overall permit process timing. Contractors also expressed concern about the recycling industry's capacity, particularly for wood waste.

As the by-law appears to be reasonable and effective, staff are proposing that the by-law requirements be expanded to newer homes, but that it be done incrementally, over time, to allow the industry time to adapt. Staff will continue to monitor the recycling capacity in the region and adjust implementation as necessary. It is also recommended that advanced demolition permits be issued when an applicant commits to full deconstruction, and that greater credit be provided for salvaged materials. Staff will also be exploring opportunities to increase demand for recovered and recycled wood.

The green demolition program is a key first step toward reducing construction and demolition (C&D) waste in the city. A more comprehensive C&D waste diversion strategy is being developed as part of an overall long-term solid waste strategy for the City, which will be brought to Council at a future date. The C&D Strategy will consider a broad suite of actions to further reduce C&D waste, such as adjusting tipping fees, implementing additional disposal bans, increasing the demand for recycled products, and supporting provincial initiatives such as Extended Producer Responsibility (EPR) programs aimed at C&D materials.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

On June 10, 2014, as part of a Heritage Action Plan, Council approved a set of recommendations aimed at discouraging heritage demolition and encouraging reuse and recycling of demolition waste from pre-1940 homes. The report included a recommendation that the minimum recycling and reuse rate for pre-1940 homes be 75%, and 90% for pre-1940

homes that are deemed character by the City. With that report, Council also adopted, in principle, a proposed C&D Waste Diversion Strategy, and directed staff to consult with the industry and report back in 2015.

Other decisions and authorities of Council in relation to this report include:

- On November 3, 2015, Council approved the Greenest City Action Plan 2015-2020 Strategy, which included as a priority action under the Zero Waste goal: Increase the diversion of wood waste from landfill and incineration by expanding the C&D Waste Diversion Strategy to increase reuse and recycling of C&D waste.
- In 2011, Council endorsed Metro Vancouver's Integrated Solid Waste and Resource Management Plan (ISWRMP) including the following municipal actions focussed on C&D waste diversion:
 - Municipalities will work with Metro Vancouver to develop a process to require C&D recycling at construction/demolition sites.
 - Review municipal permitting processes (development, building, & demolition) with a view to requiring waste management plans as a condition of such permits.
 - Review the desirability and feasibility of deposit systems or other financial incentives to increase enforcement of waste management plans for construction and demolition waste.
- In 2011, Council adopted the Greenest City 2020 Action Plan. The plan's Zero Waste objectives set the target of reducing total waste to landfill or incinerator by 50% (from 2008 levels). Zero Waste Strategy #6 also sets a specific direction to reduce, reuse and recycle more construction, renovation and demolition waste.
- In 2011, Council adopted the Cambie Corridor Plan. Applications for new development within the plan area are required to provide a Green Building Strategy including a Deconstruction Approach that addresses reuse and recycling of demolition waste.

It is Council policy that fees and other charges be established on the basis of the cost of providing the associated services.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The Acting City Manager and the General Manager of Engineering Services RECOMMEND approval of the foregoing.

REPORT

Background/Context

Overview of Construction and Demolition Waste

Construction and demolition (C&D) waste is one of the largest components of regional waste, with roughly 1,600,000 tonnes generated annually in Metro Vancouver. Vancouver's share of regional C&D waste has been in the range of 30% (480,000 tonnes), which is roughly proportional to our share of the population. About 75% of that C&D waste is currently recycled. Of the remaining material that is sent to disposal, it is estimated that more than half—about 200,000 tonnes a year—could be reused or recycled.

The vast majority of regional C&D waste is related to demolition as opposed to construction or renovation activities. To date, demolition of commercial buildings has had a much higher reuse and recycling rate (approximately 80%) than that of one- and two-family homes (about 50% of materials are recycled or reused). Concrete and metal are the dominant construction materials in commercial buildings and are highly recyclable. To avoid high disposal costs, commercial buildings tend to have more sorting and separation of materials on site. Demolition of one/two family homes, on the other hand, has been typically approached in a less systematic way. The conventional one/two family home demolition technique is to first remove the hazardous materials and drywall (both are banned from disposal), then to rapidly demolish the house with an excavator, making it more difficult to separate and direct materials to material-specific recycling facilities. This mixed demolition material generally ends up disposed to landfill, with the exception of a home's concrete foundation which is normally crushed and recycled as rubble.

A typical single family home in Vancouver with a floor area of 200 m² (roughly 2200 ft²) is made up of approximately 100 tonnes of material, of which nearly half can be wood (structural framing, flooring, and siding). While much of the wood in a typical home is clean, some is painted or treated, which is much more difficult to recycle. If we conservatively assume that, using deconstruction practices, half the wood in a typical home is captured for reuse or recycling, an additional 25 tonnes of waste could be diverted from landfill. With roughly 1,000 demolitions a year in the City, this would mean an additional 25,000 tonnes of waste could be diverted from the landfill each year.

Waste Reduction Targets

The Greenest City 2020 Action Plan includes a target for reducing total waste to landfill or incinerator by 50% from 2008 levels. One of the key strategies identified to meet this target is the development of a deconstruction program to reduce C&D waste. Reducing C&D waste was identified as a priority action in the Greenest City Action Plan 2015-2020 Strategy recently approved by Council.

At a regional level, Metro Vancouver's Integrated Solid Waste and Resource Management Plan (ISWRMP) set an overall diversion target of 80% by 2020. To achieve that, the plan has a number of sub-targets including diverting 80% of C&D waste from landfill or incinerator by 2020. The priority actions Metro identified to achieve this C&D target include:

1. Mandating waste reduction and recycling on C&D projects
2. Banning clean, unpainted and untreated wood waste from disposal to landfill or incinerator, and taking subsequent actions to reduce all wood from being disposed
3. Providing depots for convenient drop-off of wood waste by residents.

To help municipalities mandate waste recycling on C&D projects, Metro Vancouver developed a Sample Municipal By-law for the Management of Waste and Recyclable Materials from Demolition Work. Development of the Sample By-law included a detailed three-year consultation program with demolition contractors, recycling facility operators, industry associations and regional municipalities. The City's green demolition by-law was modeled on Metro Vancouver's recommended by-law and process, which was well supported by stakeholders.

Green Demolition Results to Date

In June 2014, Council approved recommendations that established reuse and recycling requirements for demolition waste from pre-1940 one- and two-family homes. The requirements, as specified in the Green Demolition By-law No. 11023, are that pre-1940 homes being demolished must achieve a 75% reuse and recycling rate, and pre-1940 homes that are deemed character by the City must achieve a 90% reuse and recycling rate.

The Green Demolition By-law came into effect on September 1, 2014. Since then, contractors have been required to submit a reuse and recycling plan prior to demolition and a compliance report following the demolition of any pre-1940 home, as well as for homes that are subject to rezoning applications within the Cambie Corridor Plan area. The report must include receipts showing tonnes of material diverted and where waste materials were sent. To date, there have been 264 pre-1940 homes demolished and 32 homes demolished within the Cambie Corridor Plan area. An average of 87% of materials has been reused or recycled from these projects. This is significantly higher than the typical demolition recycling rate of 50% for houses. As a result, an additional 9,000 tonnes of materials has been diverted from disposal this year and more than 3,000 tonnes of GHGs have been avoided. Overall, compliance with the by-law has been high, with approximately 98% of applications meeting the diversion requirement. Contractors that did not meet the diversion requirements had a proportional amount of their security deposit withheld. The compliance reports have typically been reviewed within three days of receipt, and done concurrently with the building permit review.

Over the past year, staff have held six workshops, meetings and discussions with the demolition contractors and salvage/recycling facility operators. The workshops were used to raise awareness, provide training, and solicit feedback on the green demolition requirements. In general, the demolition industry is supportive of the green demolition program. Demolition contractors have indicated that the compliance reporting process has straightforward and timely but expressed concern with overall permit processing times. Contractors also expressed concern that the recycling industry lacks capacity. Recycling facility operators have indicated that they have adequate processing capacity but that end demand is limited at times (for example, when a cement kiln shuts down for maintenance). Facility operators suggested that expanding the green demolition program to newer homes should be done incrementally, over time, to allow the facilities time to find additional end markets.

In terms of challenges, the green demolition program does not appear to be slowing the rate of demolition across the city, which is driven by a number of other factors. The program has also had less salvage and reuse of materials than perhaps hoped for. For most houses, salvage operators are removing items with high resale value—these typically include fixtures, doors and windows. But there has been limited wood salvage. Recovered wood can't be reused for structural purposes unless it's recertified by an engineer. Further, the low value of virgin timber limits the demand for reused wood. There are, however, several contractors who have recently entered the local demolition field and are focussing on deconstruction and salvage, with the intent of using recovered wood for decorative purposes.

Regional Actions

Concurrent with the City's green demolition program, Metro Vancouver implemented a disposal ban on clean wood (i.e. unpainted, untreated) this year (2015). In this initial phase, the ban applies to small loads only, which would be more typical of renovations. Starting

January 1, 2015, Metro Vancouver launched a six-month education program on the new clean wood disposal ban. As of July 1, 2015, a 50% surcharge is being applied to all small loads of garbage containing clean wood if the quantity of wood exceeds 10% of the garbage load. The ban on clean wood provides an incentive for residents and contractors to separate clean wood and divert to recycling facilities, in order to avoid paying the hefty surcharge. Early results indicate that recycling of clean wood is up 30% at facilities where the ban applies.

A number of other municipalities in the region have implemented programs and by-laws aimed at reducing construction and demolition waste. These municipalities include New Westminister, Port Moody, City of Richmond and the District of West Vancouver. The programs range from requiring compliance reports similar to the City of Vancouver's (New Westminister is currently running a pilot program and the City of Richmond recently adopted a very similar approach) through to more education and outreach. An informal review of the various programs by Metro Vancouver suggested that the City of Vancouver's program is the most rigorous and is achieving the highest diversion rate.

Strategic Analysis

Improving and Expanding the Green Demolition By-law

The Green Demolition By-law has proven to be an effective tool for encouraging diversion of demolition materials. In order to increase the amount of materials diverted as per the Greenest City Action Plan goals, it is proposed that the by-law be expanded incrementally in the coming years to eventually include all one- and two-family homes. In addition, there are several by-law amendments proposed to encourage more salvage and reuse, while maintaining administrative efficiency. The proposed amendments are as follows:

- a. Expanding the green demolition program in an incremental manner, such that the following age classes of homes are included:
 - As of January 1, 2017, demolition of one- and two-family homes built before 1950 will be required to meet a reuse and recycling target of 75%. This will capture approximately 70% of all demolitions as opposed to the current 35%;
 - As of January 1, 2018, demolition of all one- and two-family homes will be required to meet a reuse and recycling target of 75%.
- b. Incentivizing full deconstruction by allowing for advanced demolition permits (to be issued up to three weeks prior to the building permit) when an applicant commits to salvaging and reusing at least three (3) tonnes of wood from a home.
- c. Incentivizing contractors to salvage and reuse as much material as possible by providing additional performance weighting for salvage material (i.e. each tonne of salvaged material counts as five tonnes of recycled material) on compliance reports.

Together, these amendments are expected to lead to higher diversion of demolition waste from one- and two-family homes over time, as well as more salvage and reuse. The proposed expansion of the program to newer homes will be brought forward to Council for enactment immediately prior to the above dates. In the meantime, staff will continue to monitor recycling facility capacity. If there are concerns about their ability to handle the increased volume produced by this program a revised timeline will be brought back to Council for consideration.

Renovations represent a small portion of demolition and construction waste and therefore staff are proposing a streamlined approach to encouraging diversion of renovation waste materials. Starting in 2018, contractors will be required as part of their renovation permit application to submit a reuse/recycling plan that achieves the 75% diversion requirement. Compliance with the plan will be audited on a case-by-case basis. This streamlined approach is meant to encourage diversion but not delay or encumber the processing of renovation permits or require more staff resources than appropriate.

Training, Capacity Building and Market Development

Ensuring there is adequate capacity in the local salvage and recycling industry is a key consideration in expanding the City's green demolition program. There are currently 51 recycling facilities in the Lower Mainland that are licensed by Metro Vancouver. These include nine facilities that primarily sort and recycle wood waste for fuel, landscape bedding, and compost additive. In addition, there are several recycling facilities that do not require a Metro Vancouver license; these are primarily concrete and metal recyclers. Staff will continue to liaise with Metro Vancouver and facility operators to maintain a good understanding of their capacity moving forward. Staff will also be exploring opportunities to increase demand for recycled wood, for example, as a fuel source for district energy systems.

In order to encourage more salvage and reuse, staff are pursuing opportunities to promote and support the re-use market. An example of an initiative currently underway is called the Vancouver Upcycle Design Project, led by the Vancouver Economic Commission in partnership with Habitat for Humanity and dozens of other local upcycle designers, makers, non-profits, social enterprises, and contractors. The intent of the project is to build demand for recovered materials by:

- showcasing upcycling throughout public projects across the city, in order to reduce misconceptions about the breadth of products and aesthetics that can be achieved using recovered materials;
- engaging the design community (through academic institutions as well as community design contests and meet-ups) in the notion of designing for deconstruction and designing with recovered materials first; and
- connecting de-constructors, haulers, recyclers, designers, upcyclers, and reuse retail outlets in order to build a local network for sharing materials, equipment, and space.

The City will also continue to offer deconstruction training for contractors, as well as improve the outreach material that is provided to homeowners to encourage reuse and recycling. In tandem, Metro Vancouver is currently updating its DLC (Demolition, Land Clearing, and Construction) Waste Management Toolkit, which will include an updated directory of the licensed recycling facilities as well as salvage yards.

The last and likely most important thing the City can do is provide clear direction as to what our requirements will be going forward so contractors and recycling facilities can do long term planning and business development with little financial risk; we believe this plan does that.

Demonstrating Leadership Through City-owned Facilities

In order to ensure the City is leading by example, the Real Estate and Facilities Management department has developed deconstruction specifications, which require contractors who are bidding on a demolition for a City-owned facility to submit a reuse/recycling plan with a diversion target that must meet or exceed 75%. Staff also have the ability to specify higher targets on a project-by-project basis if the materials within a building support it. City-owned buildings that are demolished are being tracked as part of the City's Corporate Zero Waste program, in much the same way that one- and two-family homes are currently tracked. Since implementing reuse/recycling requirements earlier this year, the City has had 11 buildings of various types deconstructed and achieved an overall diversion rate of 82%.

Implications/Related Issues/Risk (if applicable)

Financial

The Green Demolition By-law came into effect in September 2014, under the development and review of the City's sustainability group, and required a \$15,000 security deposit per application. A sustainability specialist has spent the last 18 months developing the by-law, training permit staff, working with contractors/recyclers, liaising with Metro Vancouver and designing the compliance program

Given the success, and the proposed expansion, of the program it will now be moved to a permanent home within the Environmental Services group. Along with this move to a permanent home, it is time to regularize the compliance and administrative component of this work with a new dedicated resource to administer the process.

In order to align our fees with the costs related to this green demolition process, staff are recommending an amendment to the Green Demolition By-law, such that a non-refundable fee of \$350 be introduced and that the existing requirement for a \$15,000 security deposit be reduced to \$14,650.

This non-refundable \$350 fee will recover the costs related to reviewing green demolition compliance reports and any related reports for the handling of demolition waste materials, as well as providing ongoing training, outreach and education. The green demolition fee will apply only to homes covered by the by-law requirements. The funding will ensure that the green demolition compliance reports, along with any other reports related to demolition materials handling, continue to be reviewed in a timely manner.

Environmental

The green demolition program supports the Zero Waste goal in the Greenest City 2020 Action Plan as well as Metro Vancouver's Integrated Solid Waste Resource Management Plan.

Legal

The Vancouver Charter grants the City of Vancouver broad authority over solid waste including: collection, removal, transfer, disposal and recycling.

CONCLUSION

This report summarizes the results of the implementation of the Green Demolition By-law that was approved by Council in June 2014 to encourage more reuse and recycling of demolition waste from pre-1940 homes. To date, 296 demolition projects have submitted reuse and recycling compliance reports (including both pre-1940 homes and those subject to rezoning applications in the Cambie Corridor Plan area). Of those, the average diversion rate has been 87% (compared to a typical rate of 50% for residential demolitions). An additional 9,000 tonnes of materials have been diverted from the landfill and incinerator as a result, and roughly 3,000 tonnes of GHG emissions have been avoided.

Based on the success to date, the report recommends expanding the green demolition requirements from pre-1940 homes (about 35% of all demolitions) to pre-1950 homes (70% of all demolitions) starting in 2017, and to all one- and two-family home demolitions in 2018. The report also recommends allowing for advanced demolition permits in cases where the applicant commit to significant salvage and reuse, and providing greater weighting for salvaged materials. The report outlines includes actions aimed at improving demand for reused products, providing training and outreach materials, and demonstrating leadership through deconstruction of City-owned buildings.

The green demolition program is a key first step toward reducing construction and demolition (C&D) waste in the city. A more comprehensive C&D waste diversion plan will be brought forward in 2016 as part of an overall long term Zero Waste strategy. The plan will consider a broad suite of actions to further reduce C&D waste, such as adjusting tipping fees, implementing disposal bans, opportunities for the recovery and beneficial use of materials from mixed loads of C&D waste, increasing the demand for recycled products, and supporting regional and provincial initiatives such as Extended Producer Responsibility (EPR).

* * * * *

BY-LAW NO. _____

A By-law to amend the
Green Demolition By-law

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions of the Green Demolition By-law, No. 11023.
2. Council strikes "\$15,000" from section 5.1 and replaces it with "\$14,650".
3. Council inserts new sections 6.10, 6.11 and 6.12 as follows:
 - "6.10 Any material that is reused, rather than disposed of or recycled, can be credited towards compliance with a green demolition permit condition or heritage demolition condition at a rate of 5 times its actual weight.
 - 6.11 A fee of \$350.00 must be paid before a demolition permit may be issued.
 - 6.12 Despite any other provision of this By-law, the Building By-law or the Zoning and Development By-law, a demolition permit subject to a condition imposed under this By-law may be issued up to 21 days before a building permit relating to the demolition, provided that the applicant commits to salvaging at least 3 tonnes of wood for the purposes of reuse and the permit is made subject to such a condition."
4. Council strikes Appendix C, and replaces it with the "Appendix C" attached to this by-law.
5. A decision by a court that any part of this By-law is illegal, void, or unenforceable is not to affect the balance of the By-law.
6. This By-law is to come into force and take effect on the date of its enactment.

ENACTED by Council this _____ day of _____, 2015

Mayor

City Clerk

"Appendix C"

FOR PROJECTS WITH 75% RECYCLING REQUIRED		FOR PROJECTS WITH 90% RECYCLING REQUIRED	
Recycling Rate Achieved	Amount of Deposit Refunded	Recycling Rate Achieved	Amount of Deposit Refunded
75%	100%	90%	100%
71 – 74%	50%	86 - 89%	70%
66 – 70%	20%	81 – 85%	40%
Under 65%	0	75 - 80%	20%
		Under 75%	0