



Municipal guidelines for  
**SUCCESSFUL WOOD  
WASTE DIVERSION**  
in North America



**DONTWASTEWOOD.COM**  
A collection of resources aimed at keeping wood waste out of landfills.



## ABOUT THE FOREST PRODUCTS ASSOCIATION OF CANADA

The Forest Products Association of Canada (FPAC) is the voice of Canada's wood, pulp, and paper producers nationally and internationally in government, trade, and environmental affairs. The industry is one of Canada's largest employers, operating in hundreds of Canadian communities and providing hundreds of thousands of direct jobs, and many more indirect jobs across the country.

The Canadian forest products industry is a \$57-billion-a-year industry that exports 65 per cent of its products to the U.S.. FPAC represents the largest Canadian producers of forest products. Its members are responsible for 66 per cent of certified forestlands in Canada. Third-party certification of member companies' forest practices is a condition of membership in the Association – a world first. This is an assurance that all FPAC members' products come from sustainably managed forests.



Forest Products  
Association of Canada  
[fpac.ca](http://fpac.ca)





## ABOUT DON'T WASTE WOOD

The Canadian forest products sector is a significant contributor to the Canadian economy, representing approximately two per cent of Canadian GDP. Managed sustainably, Canadian forests provide a unique source of versatile and renewable raw materials.

The Forest Products Association of Canada (FPAC) has established a goal for the Canadian forest products sector of carbon neutrality, without the purchase of offsets, by 2015. FPAC is launching a number of initiatives aimed at reducing greenhouse gas emissions across the forest products value chain, and at setting a high bar for sustainability for Canadian wood, pulp, paper and bio-products compared to their alternatives.

One of these initiatives is called "Don't Waste Wood," a campaign focused on the diversion of wood waste from Canadian and U.S. landfills. The methane production resulting from Canadian wood in North American landfills is approximately 24 metric megatons of greenhouse gases annually, the equivalent annual output of 4.7 million passenger vehicles<sup>iv</sup>.

Municipalities have a unique ability to influence the management of various wastes within their boundaries. FPAC hopes that by working in cooperation with municipalities, it can help to significantly reduce greenhouse gas emissions from wood waste, and the municipal burden of dealing with increasing amounts of waste.

As part of the "Don't Waste Wood" campaign, FPAC is issuing a friendly challenge to municipalities across North America to achieve a target of 80 per cent wood waste diversion from landfills. The guidelines provided in this document are designed to support regulators in meeting this challenge. Policymakers are encouraged to use these guidelines to inform effective decision-making regarding wood waste diversion in their jurisdictions.



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**CONTENTS**

Introduction..... 1

**1** Wood waste characterization ... 3

**2** Guiding principles ..... 5

**3** Wood waste management hierarchy ..... 7

**4** Use policy and municipal programsto foster markets ..... 9

**5** Clear communication and education ..... 11

**6** Effective and clear enforcement of regulations .... 12

**7** Green procurement..... 13

**8** Resources ..... 14



## INTRODUCTION

Many North American municipalities are struggling with issues stemming from the use of landfills. These issues range from a lack of landfill space to managing groundwater and air emissions. In order to address these concerns, municipal governments are looking at ways to divert waste away from landfills and extend their useful lives.

A large part of the waste (over 40 per cent in some cases) going to municipal landfills is from Construction and Demolition (C&D) sources, and wood makes up a substantial portion of this waste stream. The decomposition of wood waste in landfills releases a significant amount of methane gas into the atmosphere.

After wood has been placed in a landfill, it is initially decomposed by aerobic bacteria, which requires oxygen. When all oxygen has been depleted, the remaining waste is consumed by anaerobic bacteria, which breaks the wood down into substances that are then fermented. It is this fermentation that creates methane gas.

Over a 100-year period, methane gas is 25 times more damaging to our atmosphere than CO<sub>2</sub>. This is exacerbated by the fact that the vast majority of methane's damage to the environment actually occurs in the twenty years after its initial release.

Most municipalities are currently struggling with some or all of the following waste-related issues:

### **Running out of space**

Landfills near municipalities are filling up, and the cost of acquiring new land close to the city is often prohibitively expensive. Also, a new landfill near an urban area is difficult to sell politically.

### **New standards**

As more information on the hazardous effects of landfill emissions becomes available, provincial and state governments are imposing stricter regulations and municipalities are left with the cost of implementation.

### **Global warming**

Municipalities are required to do their share in the fight against global warming by reducing their GHG emissions.

### **Buying some time**

Municipalities are being forced to expand current landfill sites in order to buy them more time before they have to find a new location, but this is also very costly (for example, the City of Uvalde in Texas paid \$3.5 million U.S. to expand their landfill which serves a population of only 15,000).

### **The future**

Landfills still have to be maintained for up to 30 years after closing, to ensure the safety of surrounding soil and groundwater; all at taxpayers' expense.

### **Not in my backyard**

Common knowledge about the danger of living in proximity to potentially hazardous materials makes it difficult to find suitable space for new landfills.

### **FINDING THE SOLUTION**

By facilitating wood waste diversion, municipalities will be addressing these issues. Another benefit to addressing these issues is that municipalities will be establishing greener communities which are fast becoming the norm rather than the exception.

Research conducted at the University of California shows that recycling and reuse have twice the economic benefit of landfilling. Establishing an infrastructure that supports diversion is an investment that provides a greater return in the long run than opening a new landfill.

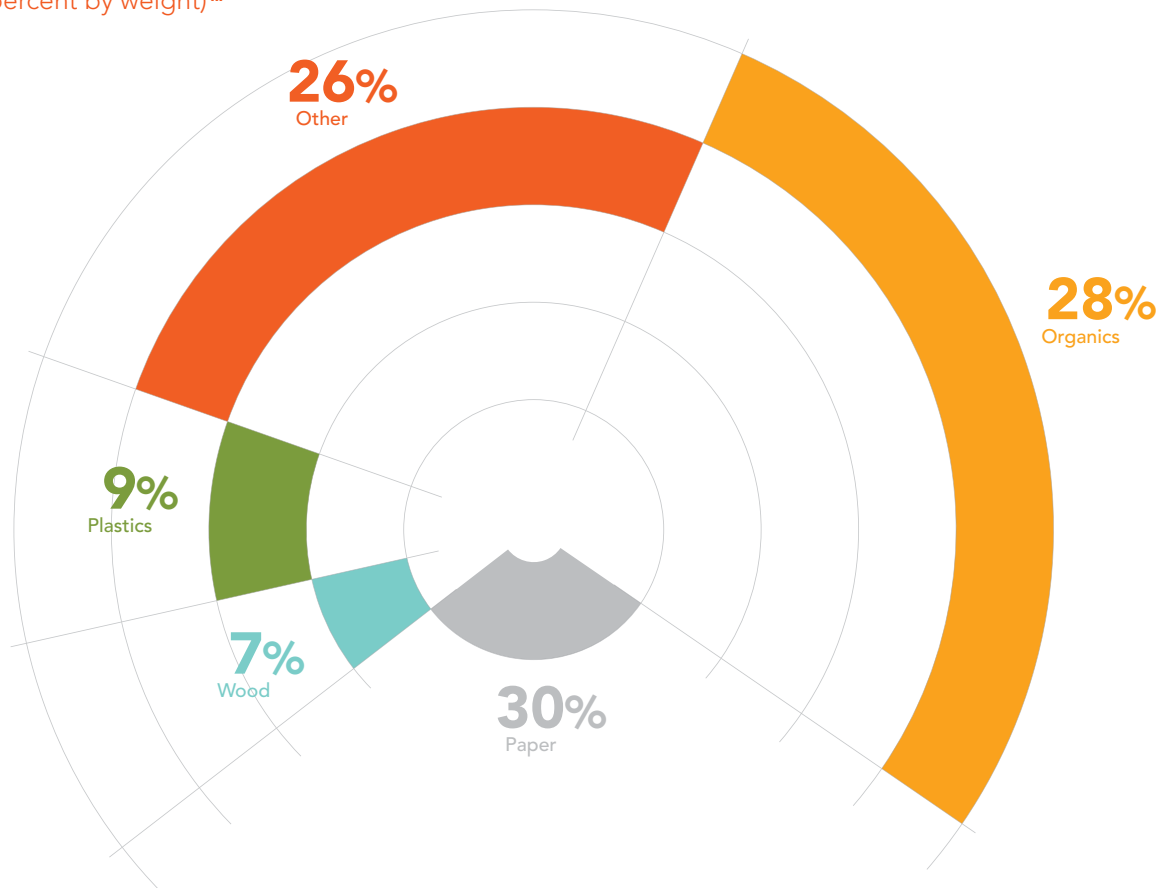
The guidelines aim to help municipalities:

- Assess the environmental impact of various solutions;
- Establish programs to facilitate wood waste diversion;
- Foster local markets for used wood that makes it too valuable to landfill;
- Reduce the costs involved with landfilling;
- Extend the life of existing landfills, given the difficulty in securing new landfill space;
- Achieve GHG emission targets by decreasing methane production; and
- Stimulate job growth by growing a deconstruction and wood recycling/reuse industry.

It should be noted that while these guidelines deal specifically with wood waste, it is important that they be implemented with balanced diversion measures across all waste streams.

## WOOD WASTE CHARACTERIZATION

**Total residential and non-residential waste generated in Canada**  
(percent by weight)<sup>iii</sup>



The U.S. Environmental Protection Agency (EPA) estimates that Municipal Solid Waste (MSW) streams including Industrial, Commercial and Institutional waste (IC&I) contain approximately six per cent wood waste (excluding yard trimmings)<sup>i</sup>. According to studies from California, Clark and King Counties in Washington, Delaware, New Hampshire, Vermont and Wisconsin, the wood fraction in construction and demolition waste (C&D) is approximately 31.5 per cent and is the largest single portion of C&D waste<sup>ii</sup>.

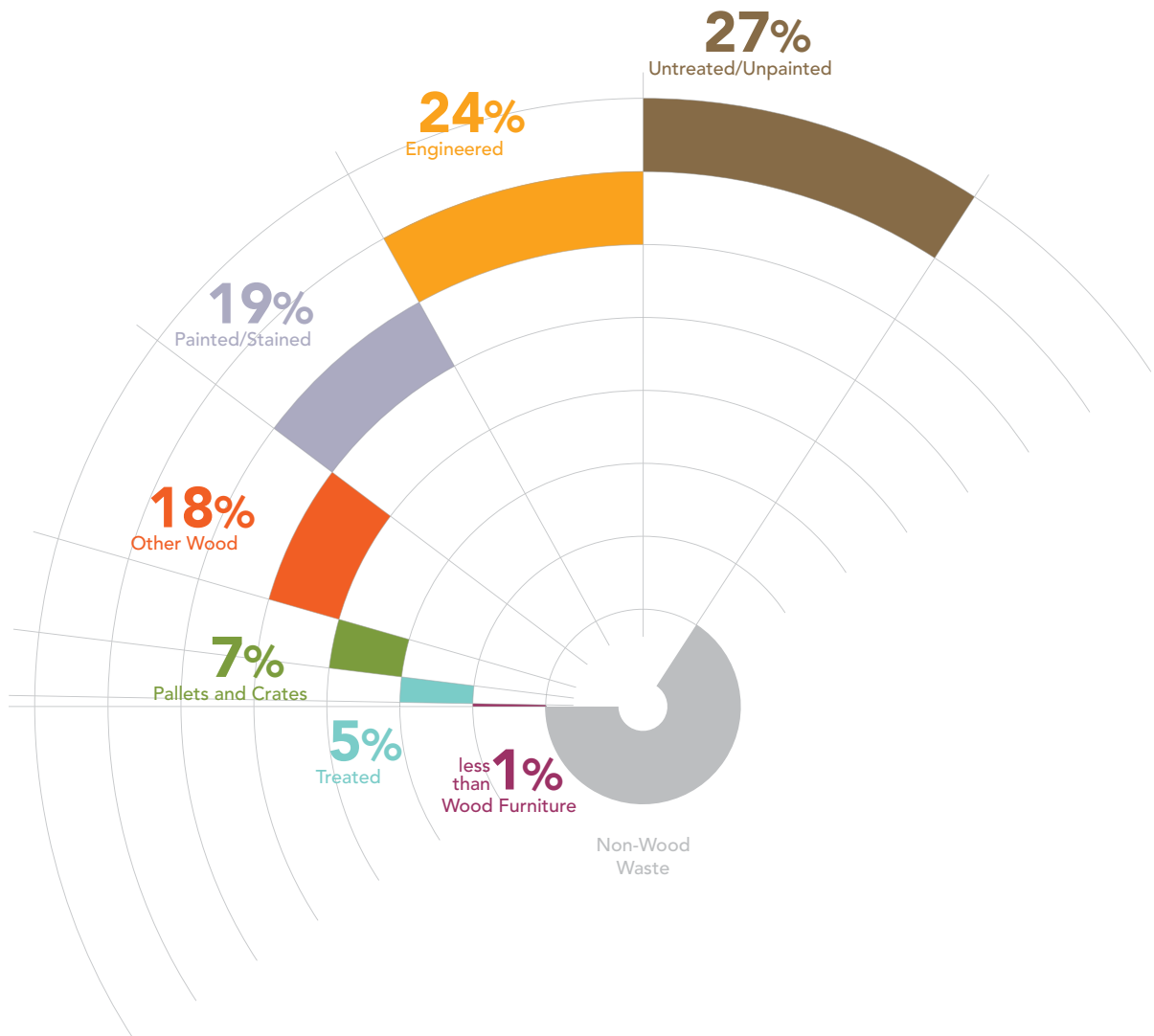
Natural Resources Canada estimates that Municipal Solid Waste streams including Industrial, Commercial and Institutional waste contain approximately seven per cent wood waste (excluding yard trimmings).

**Wood waste  
average of C&D  
waste characterization  
study results**  
(percent by weight)

C&D waste accounts for the lion's share of recoverable wood waste found in North American landfills; of all C&D waste found in landfills, over 30 per cent of it is wood.

Each sub-stream of wood waste represents a different order of value based on available markets. Pressure-treated

wood has the least marketable value since it is difficult to process safely, but only makes up five per cent of the total wood waste portion of C&D waste. The remaining 95 per cent has growing market value across North America for a variety of applications.



**NOTES**

**Treated wood** refers only to pressure-treated wood, excluding painted and stained wood.

**Engineered wood** refers to wood products manufactured by binding together strands, particles or fibers of wood using an adhesive.

**Other wood** is a catch-all for all other wood. It consists primarily of wood roofing and siding and mixed demolition wood that is too contaminated to be easily identified.

## 2 GUIDING PRINCIPLES

The following five principles should guide effective wood waste diversion policies at all levels of government.

### 1 Shared stewardship responsibilities for wood products

The responsibility of diverting wood waste from landfills should not fall solely on the shoulders of municipalities, but effective policymaking is key to embedding diversion practices into everyday life. The wood products industry has many key stakeholders and participants including forest managers, wood products manufacturers, transporters and distributors, retailers, builders, building owners, waste managers,

re-processors, and regulators (municipal, state/provincial and federal). Shared responsibility means spreading the stewardship responsibilities across the wood products lifecycle so that no single point is held responsible for the impact of the entire lifecycle. If a balanced approach is taken, wood waste diversion will be maximized and all stakeholders will benefit. Shared responsibility across the lifecycle is key to effective management and diversion of wood waste.

### 2 Waste minimization and resource efficiency

Minimizing the amount of wood waste that goes to landfill begins with maximizing the use of wood that has been extracted. All stakeholders along the wood products lifecycle should be encouraged to minimize waste and improve efficiency on all fronts. Maximizing resource efficiency drives environmental sustainability as well as competitiveness. An example of this would be architects who design structures and components according

to material dimensions, thus reducing the amount of cutting waste.

New software is emerging that helps designers minimize waste (e.g. Weyerhaeuser's **iLevel** suite of design software). With programs such as **Javelin** and **TJ-OptiFab**, users can easily calculate the amount of materials needed for a project as well as electronically order trim cut to exact specifications, thus significantly reducing the amount of on-site waste. This type of software promotes a greener attitude towards building and encourages use of framing options that conserve resources (e.g. use of wider-spaced 2x6 studs in framing instead of 2x4 studs typically spaced closer together).

### 3 Market-based incentives

In order to keep wood waste out of landfills, markets must be established for the materials. This can be facilitated through regulatory measures and incentive programs. For example, within the permitting process, special consideration can be

The ultimate objective of regulation or incentive programs should be to establish long-term markets for the diversion of the approximately 95 per cent of current wood wastes that hold value after primary usage.

given to applicants who have worked waste diversion into their building or demolition plans. As project managers start diverting waste to take advantage of incentives, more of this diverted wood will become reliably available for purchase, encouraging the growth of a reuse market.

Using incentives to help establish markets will increase resource efficiency and stimulate the economy while minimizing environmental impacts.

#### **4 Lifecycle-based environmental stewardship**

Wood waste diversion practices must strive for the maximum environmental stewardship of land, water, air and climate. When evaluating diversion options it is crucial to look at the lifecycle of wood as a whole, from when the tree is harvested to where the resulting product ends up at its "end-of-life." This includes everything from processing to transportation. Taking all of this information into account enables policymakers to look at wood waste diversion from a pragmatic perspective, and will help them develop policies that involve realistic options and take the various tradeoffs into account.

The ideal lifecycle approach to base all policy design on is the "cradle-to-cradle" approach, which means recognizing the value of wood that remains at its traditional end-of-life. Using reclaimed wood in new builds completes the lifecycle of green building – using old buildings to build new ones.

#### **5 Inclusive policy design**

Design of wood waste diversion policies should be done in consultation with industry and other stakeholders. Given their expertise in each area, these stakeholders are a valuable resource as they will be able to provide first-hand information on how policies will affect their respective trades, and contribute suggestions on how to make them more practicable. Inclusion of all primary stakeholders will insure effective policies that realize sustained environmental and economic benefits.

In addition to involving all stakeholders, policy design should include all construction materials. In order for diversion policy to be most effective, it cannot favour any one stakeholder or material over the other. By consulting with all primary stakeholders, policymakers can ensure everyone is treated fairly and that this is a group effort.

## 3

**WOOD WASTE  
MANAGEMENT  
HEIRARCHY**

Policy makers in waste management commonly use waste hierarchies to guide the preferred approaches to waste diversion. What follows is a wood-waste specific hierarchy to guide policy makers. The “6 R’s”, ranked in four levels, are intended to inform policy decisions that maximize the environmental benefit from the use of wood through increased wood waste diversion.

**1 Reduce**

Before considering the means of diverting wood waste, policy should seek to maximize the reduction of wood waste. When undertaking building projects, architects and planners should be encouraged to reduce project inputs and minimize waste. In Advanced Framing, for instance, building details are designed to minimize unnecessary corner studs, excessive lumber at window and door

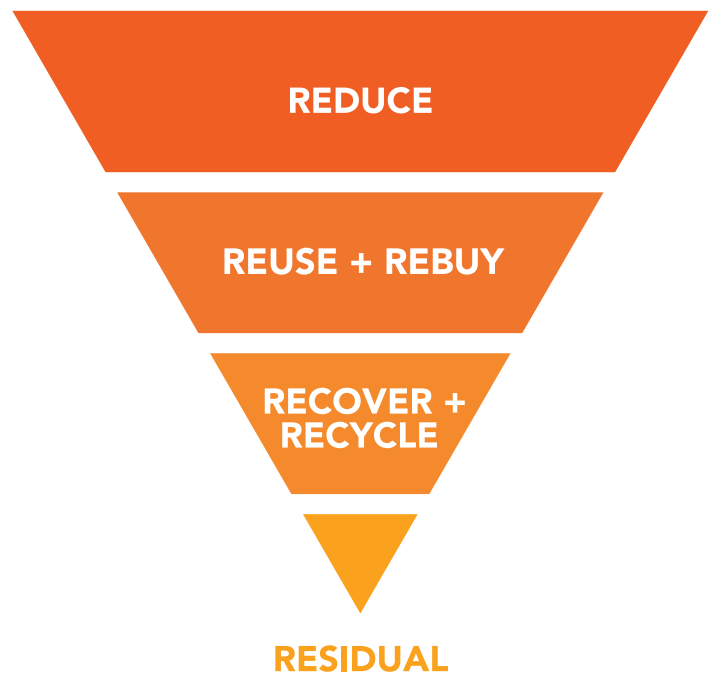
openings, and over-built lintels. New design software makes use of Advanced Framing to provide designers with solutions that reduce project input.

**2 Reuse and rebuy**

New builds should seek to maximize wood products captured from the disassembly of other structures as well as the procurement of wood products with recycled content.

It can be economically, aesthetically, and environmentally beneficial to identify

demolition projects that could contribute elements to a given new build. These include high-value ‘architectural’ elements such as large timbers, flooring and doors, as well as any other lumber that can be reused. Formalized programs that connect demolition projects with new build projects should be pursued.



In terms of fostering markets for wood waste, programs and policies that support the use of wood products that contain recycled content will help drive demand for diverted wood waste. The availability of these types of products (such as medium density fiberboard and particle board) is growing and new and existing markets will continue to grow with the help of effective incentives.

In order to facilitate the development of markets for recovered building materials, local governments should consider creating a list of private and non-profit reuse centres, as well as companies practicing deconstruction in metropolitan areas. This information can be posted on a publicly available web site. Examples can be found at [Don'tWasteWood.com](http://Don'tWasteWood.com)

Providing public sector funding for the development of used building material outlets will help establish these facilities in communities that do not currently have them.

Additionally, "Design for Disassembly (DfD)" techniques should be encouraged during the planning stages for new builds to ensure materials are easily recovered for future reuse. More information on Design for Disassembly can be found on the **Canadian Standards Association's website**<sup>1</sup>.

### 3 Recover and recycle

After waste reduction and reuse is maximized, the remaining wood waste will inevitably require processing of some kind in order to keep it out of landfill. An outcome-based approach that evaluates options based on environmental performance and economic reality should be used to determine optimal solutions.

The best way to determine the viability and net benefit of wood waste processing is to consider the options on a lifecycle basis including the transportation requirements throughout the value chain. These options include processing wood waste for reuse in a similar form (such as re-milling lumber to be used again as lumber) and processing wood waste into a different valuable form (such as conversion of damaged or lower grade lumber to biofuel).

Several manufactured wood products are available that are made from diverted materials, including particleboard, i-joists, and hardboard. However, these products often have a strict set of rules governing what type of residual materials can be used in their manufacture.

The complexity of these issues and the technologies and techniques that can be applied to the processing and re-processing of wood waste are numerous and vary in their

effectiveness. The Forest Products Association of Canada (FPAC) working on behalf of the Canadian forest products industry intends to develop more specific policies in this area. It believes that no policy approach should be prescriptive and that solutions should be considered primarily with environmental outcomes and general practicality in mind.

Currently the most common markets for non-reclaimed wood waste include:

- Fuel applications<sup>2</sup>
- Mulch
- Composting bulk agent
- Animal bedding
- Landfill cover

### 4 Residual management

Wood waste diversion strategies should be able to achieve rates of at least 80 per cent. The remaining residual wood waste will require disposal of some kind. Any residual wood waste should be sent to controlled modern landfills. Since residual wood waste will typically be treated wood, landfills must have a modern liner and leachate collection system in order to be able to accept and effectively deal with these materials. Also, in order to reduce methane emissions and maximize value recovery, all residual wood waste should go to facilities with methane gas capture and generation systems.

<sup>1</sup> [www.csa.ca/cm/ca/en/guideline-for-design-for-disassembly-in-buildings](http://www.csa.ca/cm/ca/en/guideline-for-design-for-disassembly-in-buildings)

<sup>2</sup> Only to be considered if net energy is produced and environmental protections are in place.

## 4 USE POLICY AND MUNICIPAL PROGRAMS TO FOSTER MARKETS

Ultimately, it is critical to change the way the market values wood waste. This can be done through innovative and practical policies and programs directed at delivering feedstock supply certainty and supporting new and innovative uses for wood waste. Effective policies and programs of this nature will deliver economic benefits to innovative companies and communities as well as the environmental benefits associated with diversion. The following is a summary of some practical initiatives to support market development.

### Accessible dropoff points for wood waste

Travel to transfer stations and landfill locations is both time consuming and expensive for contractors and small companies. Providing drop-off points for separated loads of waste will encourage source separation and make the activities required to divert wood waste commonplace. Ideally, drop-off should be low cost or free, and collected wood waste can then be aggregated in large quantities and marketed for reuse, recycling or renewal. The revenues brought in from the sale of the material can go towards the costs of running the drop-off program.

### Include waste management plans in the permit process

Municipalities can consider the idea of making permits for new builds, demolition or major renovation projects contingent on the completion and approval of a wood waste management plan with a specific diversion target for all wastes. Another option would be to either fast-track or lower the cost of permit applications that provide a wood waste management plan and target as part of their submission. Each of these strategies would help to make wood waste diversion a major part of construction projects in your jurisdiction.

Regulations should also be considered requiring building projects over a certain size to practice source-separation of waste for distribution to the appropriate facility.

In 2009, the State of North Carolina banned wooden pallets from landfills. Wood pallets are now diverted and reused, recycled into other products, or used as bio-fuel in energy generation.

### **Institute deposit programs**

Municipalities could consider programs that require deposits to be placed against wood waste diversion targets for major building or demolition projects. If diversion targets are met, the deposit is returned to the project proponent. For larger projects, proponents could be required to post bonds for the penalty amount should the targets for the project not be met. In San Diego, California, for example, contractors are required to pay a deposit prior to demolition projects, the full amount of which is returned once they provide proof a required level of diversion has been achieved. Various North American jurisdictions have used a similar approach to great effect.

### **Preferential tipping fees**

Another incentive option is to vary tipping fees for waste loads based on their contents. Loads containing no wood waste or that have had their wood waste removed at the source could be priced significantly lower than those that contain wood waste that can still be removed.

### **Reuse store**

In cities faced with urban blight problems, a used building materials retail facility could be established to economically benefit from the demolition of structures. Building materials salvaged from condemned structures would be sold, providing the city with income, while new jobs and training opportunities in the field of deconstruction would be created.

### **Used building materials web site**

Independently, or in combination with a reuse store, a web site can be established to list all used building materials gathered through local deconstruction as they become available.

### **Used materials broker**

If setting up a reuse store is not a viable option, reclaimed building materials can be sold through a broker. The broker would be made aware of materials available from a particular deconstruction and would, in turn, locate buyers for the recovered materials. Often, the brokering can be done in tandem with the deconstruction so the items are sold right off the site, eliminating transportation costs.

### **Implement pilot programs**

Pilot programs are a sound way to test the efficacy of different diversion options within a given community. Many municipalities have implemented pilots that have turned into established waste diversion programs.

## 5 CLEAR COMMUNICATION AND EDUCATION

Finding the right way to communicate wood waste diversion plans and policy to industry is crucial in order for these solutions to gain widespread acceptance.

The benefits of wood waste diversion should be communicated using plain language and examples that are relevant to stakeholders. Benefits such as lowered operational costs and increased efficiency should be emphasized. Direct engagement with industry representatives (demolition firms, haulers, building contractors) should be part of any communications campaign.

Once new regulations are in place, municipalities can work with stakeholders in industry and civil society to foster behavioural change related to wood waste. Communicating with residents using simple language like “consider wood waste when renovating,” along with direct interaction to help connect wood waste generators to buyers and processors could go a long way in effecting long term change in wood waste diversion. Furthermore, residents may need to be shown how reclaimed wood can be incorporated into their building projects – the reality is that current thinking around renovation does not consider salvaged building materials. Online educational tools could help educate the public about incorporating reclaimed wood into their renovation projects.

With respect to the construction industry, local construction-related training programs can be encouraged to incorporate deconstruction techniques. For example, Mott Community College in Flint, Michigan, offers a deconstruction course as part of their Sustainable Construction Certificate program. Providing public sector funding to assist the development of programs such as this

would aid in creating a new generation of forward-thinking contractors. Training grants for labour unions that incorporate deconstruction as a component of apprenticeship programs would also be effective.

Educating the community can involve employing social marketing strategies, as demonstrated by the City of Hamilton, Ontario. Tactics involve a student “Green Team” outreach initiative as part of the household organics collection program, as well as the Gold Box Recognition and Rewards Program which recognizes citizens who exceeded a 65 per cent waste diversion target evaluated through random household waste audits. An outreach team which targets construction sites could achieve similar results in the C&D community.

## 6 EFFECTIVE AND CLEAR ENFORCEMENT OF REGULATIONS

Policy regulations must be backed up with adequate enforcement in order to be effective. Enforcement ensures a level playing field is maintained and that the market continues to progress towards eliminating wood waste from landfills. Those who do not comply should be held accountable,

through timely financial or other penalties (rescinding of permits, etc.), in order to set an example for what is expected in a given jurisdiction.

At the residential level, some municipalities fine households for not properly sorting their waste. This is an effective method to hold residents accountable for what they dispose of. Such measures however must go hand-in-hand with a diversion option such as a drop-off centre.

Another example of enforcement is to withhold funds held in a deposit system, as described earlier. If a contractor does not meet the diversion target set in the permit, their deposit is forfeited.



## GREEN PROCUREMENT

Governments can lead the way through aggressive green procurement policies. Government contracts for building, renovation and demolition projects should have requirements for significant wood waste diversion, products with recycled content, and innovative approaches to maximize the economic and environmental benefits of wood waste diversion.

The Forest Products Association of Canada recommends that procurement policies favour responsible wood and wood products suppliers who are committed to these five key principles of sustainability:

- Harvest legally
- Regenerate promptly
- Reduce waste and promote recycling
- Make efforts to reduce greenhouse gas emissions
- Welcome public scrutiny of their operations

Dozens of municipalities across North America have chosen to require that leading certification systems certify all municipal projects. An ideal certification system should: support reuse of building materials; give fair credit for diversion practices across the board (not favouring the diversion of one particular material); take into account the environmental impact of manufacturing a particular building material (i.e. credit should be given for building with materials which do not impact the environment as much in their manufacture).

For municipal redevelopment projects, incentives can be developed to facilitate deconstruction-related activities such as:

- Developing contract bids that provide additional time for deconstruction, and providing contractors with a list of recycling facilities/reuse centres where materials can be sent.
- Creating bidding requirements that award bonus points to contractors who recover materials.
- Awarding additional points for contractors who use trainees enrolled in construction training programs that incorporate deconstruction.

The City of Vancouver's Asphalt Plant and Materials Testing Facility is built out of 80% recycled and salvaged materials. The key to this project's success? It was designed based on reclaimed materials that were readily available, resulting in an aesthetically pleasing building and savings of \$140,000.



## RESOURCES

### **Don't Waste Wood**

A collection of resources aimed at keeping wood waste out of landfills.

[dontwastewood.com](http://dontwastewood.com)

### **Forest Products Association of Canada**

The voice of Canada's wood, pulp, and paper producers.

[fpac.ca](http://fpac.ca)

### **Feel-Good**

A number of resources and information about Canada's sustainably harvested wood products.

[feel-good.ca](http://feel-good.ca)

### **The Economic Impact of Solid Waste Disposal and Diversion in California**

A University of California study highlighting the economic benefits of diversion over landfilling.

[ageconsearch.umn.edu/bitstream/36109/1/sp01og01.pdf](http://ageconsearch.umn.edu/bitstream/36109/1/sp01og01.pdf)

### **U.S. Environmental Protection Agency**

U.S. Municipal Solid Waste data.

[epa.gov/epawaste/nonhaz/municipal/index.htm](http://epa.gov/epawaste/nonhaz/municipal/index.htm)

### **2007 Massachusetts Construction and Demolition Debris Industry Study**

An evaluation of the (then) current and future status of C&D waste management in the State of Massachusetts.

[mass.gov/dep/recycle/reduce/07cdstdy.pdf](http://mass.gov/dep/recycle/reduce/07cdstdy.pdf)

### **Recovering Wood for Reuse and Recycling: A United States Perspective**

A document published by the USDA Forest Products Laboratory that quantifies the wood waste being generated in the U.S., and describes developing markets for recycling/reuse.

[fpl.fs.fed.us/documnts/pdf2004/fpl\\_2004\\_falk001.pdf](http://fpl.fs.fed.us/documnts/pdf2004/fpl_2004_falk001.pdf)

### **An Analysis of Resource Recovery Opportunities in Canada and the Projection of Greenhouse Gas Emission Implications**

A study put out by Natural Resources Canada showing how reuse/recycling reduces greenhouse gas emissions.

[rcbc.bc.ca/files/u3/RR-opport-data-report.pdf](http://rcbc.bc.ca/files/u3/RR-opport-data-report.pdf)

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### **The Greenhouse Gas and Carbon Profile of the Canadian Forest Products Industry**

A study of the GHG impact of the Canadian Forest Products Industry published by the National Council for Air and Stream Improvement.  
[dnr.wi.gov/environmentprotect/gtfgw/documents/SR07-09.pdf](http://dnr.wi.gov/environmentprotect/gtfgw/documents/SR07-09.pdf)

### **Waste Management Industry Survey: Business and Government Sectors**

A report put out by Statistics Canada.  
[statcan.gc.ca/pub/16f0023x/16f0023x2006001-eng.pdf](http://statcan.gc.ca/pub/16f0023x/16f0023x2006001-eng.pdf)

### **Guideline for Design for Disassembly and Adaptability in Buildings**

A voluntary guidance document that provides a framework for reducing building construction waste at the design phase, through specific principles; published by the Canadian Standards Association.

[csa.ca/cm/ca/en/guideline-for-design-for-disassembly-in-buildings](http://csa.ca/cm/ca/en/guideline-for-design-for-disassembly-in-buildings)

### **Ban on landfilling of wooden pallets in North Carolina: an assessment of recycling and industry capacity**

A study providing information that supported the decision to ban wooden pallets from landfills.

[nrs.fs.fed.us/pubs/34579](http://nrs.fs.fed.us/pubs/34579)

### **San Diego Construction and Demolition Debris Recycling Ordinance**

A document outlining the requirements for recycling and disposal of C&D debris, and describing the deposit system.

[sandiego.gov/development-services/industry/pdf/infobulletin/ib119.pdf](http://sandiego.gov/development-services/industry/pdf/infobulletin/ib119.pdf)

### **Mott Community College Sustainable Construction Certificate**

A program guide with description and curriculum.

[mcc.edu/programs\\_courses/prog\\_guide.php?programid=BCSC1](http://mcc.edu/programs_courses/prog_guide.php?programid=BCSC1)

### **City of Hamilton Gold Box**

A web page dedicated to the City of Hamilton's Gold Box program, rewarding homeowners for properly separating their recyclables from week to week

[mygoldbox.ca](http://mygoldbox.ca)

### **City of Vancouver Materials Testing Facility project notes**

Find out how the City of Vancouver saved money and produced an environmentally friendly building using reclaimed materials.

[cascadiagbc.org/resources/case-studies/COVTestingcentercasestudy.pdf](http://cascadiagbc.org/resources/case-studies/COVTestingcentercasestudy.pdf)



## ENDNOTES

- <sup>i</sup> Robert H. Falk, David B. McKeever, USDA Forest Service, *Recovering Wood For Reuse And Recycling A United States Perspective*, Forest Products Laboratory, 2004
  - <sup>ii</sup> DSM Environmental Services, Inc., *Massachusetts Construction And Demolition Debris Industry Study*, 2007
  - <sup>iii</sup> Rob Sinclair, *An Analysis of Resource Recovery Opportunities in Canada and the Projection of Greenhouse Gas Emission Implications*, Natural Resources Canada, March 2006
  - <sup>iv</sup> Brad Upton, Ph. D, Reid Miner, Kristen Vice, *The Greenhouse Gas And Carbon Profile Of The Canadian Forest Products Industry*, National Council for Air and Stream Improvement, October 2007
-