

The Construction and Demolition (C&D) Diversion and Innovation



Thinking Outside the Landfill

300 kg/person/yr target

Definition of C&D Debris

- Materials which are normally used in the construction of:
 - buildings;
 - structures;
 - roadways;
 - walls; and
 - other landscaping material



C&D Debris Disposal Site Guidelines

- The Guidelines do not apply to
 - rock, aggregate, bricks, mortar, concrete
 - asphalt pavement
 - soil
 - porcelain or ceramic materials,
 - trees, brush, limbs, stumps, root balls, organic mat
 - milled wood
- free of adhesives, coatings and preservatives



New Disposal/Diversion Goal

- 300 kg/person/yr disposal by 2015
- Currently disposing of 400 kg/person/yr
 - 50% lower than the Canadian average
- Must divert more C&D debris to reach this goal
- C&D debris is estimated to account for 25 to 30% of the solid waste stream
 - Approximately 200,000 tonnes/year

New Disposal Goal (300 kg/person/yr)

- Wise and efficient use of resources
 - Reduced landfill environmental impacts
 - Reduced environmental impacts associated with the production of products made from virgin materials
- Solid waste as a resource
 - Creation of local jobs
- Innovation
 - New technologies to produce value added products
 - More efficient processes to divert C&D waste
 - Constructing for deconstruction

Past to present work

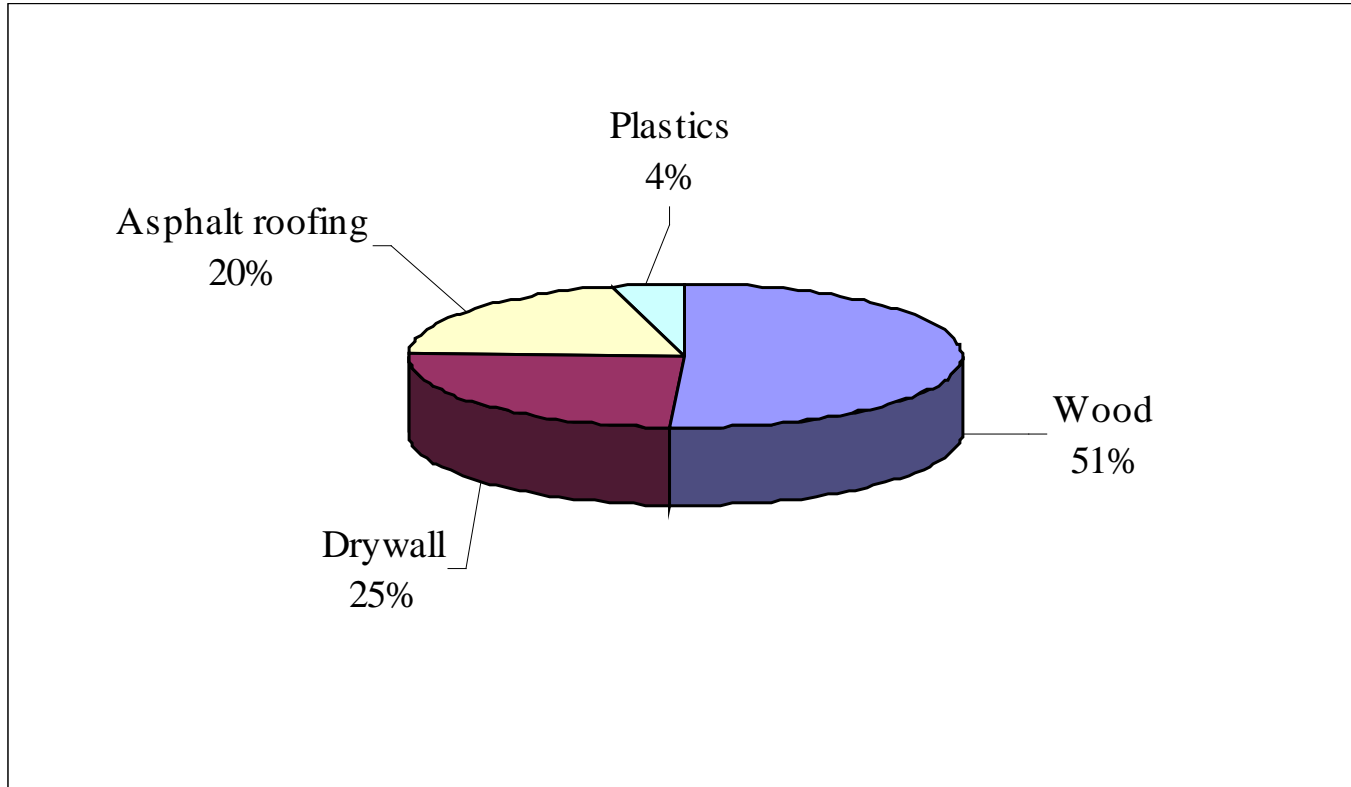
- C&D Study 2006
- C&D Stakeholder Committee
- Our Path Forward
 - Collaborate with stakeholders to develop guidelines around BMP's
 - Develop education and communication plan on BMP's
 - Ensure regulatory environment supports C&D waste prevention and diversion



C&D Stakeholder Committee

- Consistency across the province to create a level playing field
- Potential options to increase C&D diversion:
 - Approval conditions for C&D landfill, transfer stations, processing facilities
 - Tracking/compliance of C&D waste at the point of generation
 - Economic incentives/disincentives
 - Bans

Background



Background

- 25 C&D Debris Landfills in the province
 - 15 Municipal
 - 10 Private
- 17 other receiving facilities
 - Transfer stations
 - Municipal solid waste landfills that process C&D
 - Private processing sites (HRM)



C&D Materials of Interest

- The Big Three
 - Wood
 - Wallboard
 - Asphalt Shingles
- Other
 - Window glass
 - Vinyl siding
 - Flooring
 - Ceiling tiles
 - Treated wood

Clean Wood

- Not regulated by NSE
- No coatings
 - no paint, varnishes, etc.
- Off-site for fuel
 - Fireplace
 - Brooklyn Power Corp.
- Mulched/chipped for on-site beautification
- Bulking agent for compost
- Landfill cover
 - LEED does not recognize landfill cover



Composite and Coated Wood

- Categories
 - Plywood, particle board, MDF, etc.
Composed of glues and adhesives
 - Painted wood
 - Laminate wood i.e. laminated with plastics
- Very limited diversion potential
- Landfill site road amendment (traction)
- Landfill cover
- New R&D projects
 - Bulking agent in compost
- Other potential uses
 - Use to produce more composite wood





Wood waste in Massachusetts

- 27% unpainted, untreated
- 24% engineered wood
- 19% painted/stained
- 7% pallets and crates
- 5% treated
- 19% other
 - furniture, wood roofing and siding and mixed demolition wood that is too contaminated to be easily identified.
- Wood waste audit conducted in Clare
 - higher percentage of unpainted, untreated wood

Clean and Coated Wallboard

- Landfill cover
- Compost amendment
 - No coatings
- Addition to bio-solids
 - Clean and coated
- Wallboard recycling
 - Halifax C&D Recycling
 - New West Gypsum
- Wallboard and chipped wood compost bedding for cows



Wallboard/gypsum on Farms

- Substituting Waste Gypsum Wallboard for Agricultural Gypsum
 - DNR Publication WA-607-04 rev
- Best Management Practices
 - Processing and Applying Waste Wallboard as an Agricultural Gypsum Substitute
- Speaking to agricultural college about a potential student submission



Asphalt Shingles

- Chipped and used at landfill:
 - mixed with other materials for landfill cover
 - used on site as road amendment
 - used for landfill site surface pads
- Lunenburg rails to trails project
 - Environmental and health based risk assessment study
 - Follow -up study
 - More testing under new and longer conditions
 - Value-added testing



Asphalt Shingle Processing

- Processed into
 - Asphalt grit
 - used in pavement
 - Asphalt flake
 - used as an alternate energy source
- Student research project
 - to assist Lafarge better introduce asphalt flake into their system







Proper storage of processed shingle

Ground shingle in injection hopper





Automated measured batch-feed system



Feeding conveyor to Mixer



Laying mix to municipal specifications

Window Glass Recycling

- Miller Waste in Kemptown
- Glass from window manufacturers
- Tested receipts for concrete mix
 - Concrete floors
 - Outdoor concrete pads
 - Septic bed
- Looking into other markets
- Testing bottled glass
 - Mostly for concrete
 - Landscaping



Carpet in Nova Scotia

- 7,500 tonnes in NS
- Ends up in both the MSW and C&D streams
- Nylon and polyester is recyclable
 - Infrastructure is in Georgia and Asia
- Small quantities are being diverted through carpet suppliers
- Carpet R&D project

Vinyl Siding

- Recyclable
- Markets do exist in Ontario and elsewhere
- Not aware of any vinyl siding separation in Nova Scotia

Other C&D materials

- Insulation

- reuse, disposal

- Flooring

- Ceramic clean fill
- Hardwood reuse
- Vinyl potential recycling
- Laminate disposal
- Linoleum compostable
- Carpet recyclable

- Countertop and laminate cupboards

- Reuse, but eventual disposal

Other C&D materials

- Ceiling tiles
 - Mostly disposal
 - Potential to turn into insulation
 - Supplier in US will take back old tiles
- Pressure treated lumber, creosote timbers
 - Currently disposed
- Reusable materials
 - Renovators resource
 - Some limitations due to "off-spec" / legal liability.

It's about Innovation

C&D Transfer Facility









NOVA SCOTIA











New Valley Waste Resource Management Building

- It'll be waste not, want not at Valley building made of recyclables

By GORDON DELANEY
Valley Bureau
Thu, Sep 15 - 4:55 AM



Municipal Management Practices to Reduce C&D Disposal

- Source Separation Areas
 - Sometimes separate materials on tipping floor
- Tipping (disposal) fees
 - Variable for source separated C&D
- Compliance programs
 - Require separation
 - Drop off area with camera
 - Work with construction, renovation and demolition industry
 - Education, letters, general conversations, etc.
 - Monitor incoming materials
- Municipal by-laws
 - HRM's 75% diversion requirement for C&D

Dalhousie Dismantling Project

- Dismantling/demolition of 4 wooden houses
- Studying dismantling issues including
 - Time
 - Resources
 - Tipping fees
 - Quantities generated
- Will produce report with recommendations
- Dismantling cost was 20% higher.

C&D Diversion Disincentives

- It's 'cheap' to landfill in many areas of the province
- Diversion options not available in some cases
 - composite wood, coated wood and coated wallboard
- Change
- Costs to generators
 - Dismantling wooden structures versus demolition and disposal
- Illegal dumping

A Diversion Challenge



Less of a Challenge than Demolition



Similar Challenge to Gutting a Building



Even Less of a Challenge New Construction



C&D Diversion Incentives

- Meet the disposal goal
- Environmental protection
 - Waste diversion and resource conservation
- Increase economic activity
 - Local 'green' jobs
 - Haulers, processors, end users
- Innovation
 - The creation of value added products
 - e.g. asphalt shingle flake/grit, compost, etc.
 - Creation of more efficient ways to dismantle a building;
 - Development of new construction materials and building design that facilitate deconstruction/diversion (design for environment);

NSE Work to Attain 300 kg goal

- CANS 'Best Management Practices' (BMP) committee
 - Will review past C&D work, other jurisdictional practices and status of C&D in the province
 - Goal is to develop Best Management Practices to help inform NSE
 - BMP's will include a communications/education component
 - Tracking is of interest
- Municipal C&D permitting process
 - Tracking, diversion conditions, etc.

NSE Work to Attain 300 kg goal

- TIR
 - LEED silver construction
 - No demolition diversion standards for wood, wallboard or asphalt shingles
- Internal NSE planning