

NO: R217 COUNCIL DATE: October 18, 2010

REGULAR COUNCIL

TO: **Mayor & Council** DATE: **October 15, 2010**
FROM: **General Manager, Engineering** FILE: **0450-20 (swmp)**
SUBJECT: **Regional Integrated Solid Waste and Resource Management Plan**

RECOMMENDATION

The Engineering Department recommends that Council:

1. Endorse the current draft of the Integrated Solid Waste and Resource Management Plan (ISWRMP), attached as Appendix I to this report, subject to the following amendments:
 - a. the new wording under the “New Facilities” section of the ISWRMP being further amended to include the words “*Regionally or privately owned and operated facility*”; and
 - b. the new wording under Goal 2, Strategy 2.6, item 2.6.2 being further amended to:
 - i. indicate that region-wide diversion of organics generated by single family residences will occur “*by 2015*” rather than “*by 2012*”; and
 - ii. delete the words “*all forms of waste-to-energy except anaerobic digestion*”.
2. Reaffirm the resolution that Surrey Council adopted on July 12, 2010 that Metro Vancouver undertake an open market request for proposals for disposal of residual waste materials after diversion of recyclable materials that is not limited from the perspective of potential technologies and the number of facilities that can be constructed to address the regional waste stream and allows for both in-region and out-of-region options; and
3. Direct staff to forward a copy of this report and the related Council resolution to Metro Vancouver as Surrey’s input to the current draft of the ISWRMP.

INTENT

The purpose of this report is to seek Council endorsement of the Metro Vancouver (MV) Regional Integrated Solid Waste and Resource Management Plan (ISWRMP) subject to recommended revisions as documented in this report.

BACKGROUND

During its Regular meeting on July 12, 2010 Council considered Corporate Report R154; 2010, titled “Draft Regional Integrated Solid Waste and Resource Management Plan”, a copy of which is attached as Appendix I. The report provided an overview of the draft ISWMP, April, 2010. Council adopted the recommendations of that report and authorized staff to forward a copy of report to MV as the City’s input relating to the draft Plan.

Since that time the draft ISWRMP has been further updated based on input that has been received through consultation with stakeholder groups including the following:

- The general public;
- All MV member municipalities and electoral areas;
- Adjacent Regional Districts;
- First Nations;
- A Panel comprised of local solid waste management experts and specialists, business owners and members of the general public;
- A Technical Staff Forum comprised of MV and member municipal waste management staff; and
- Government Ministries and Agencies.

The updated version of the ISWMP, dated July 2010, was approved by the MV Board on July 30, 2010 for submission to the Ministry of Environment for approval and for circulation to member municipal Councils for endorsement. A copy of the updated ISWRMP that highlights amendments that have been made to the April, 2010 draft is attached as Appendix II to this report.

DISCUSSION

Engineering Department Review

The Engineering Department has reviewed the updated ISWRMP (Appendix II) and has listed in the Reference Table attached as Appendix III the amendments that have been introduced since the previous draft. A total of 61 amendments have been introduced.

In general, staff supports the amendments, as they either support and strengthen or bring greater clarity to each section. There are, however, a few amendments with which staff has a concern. These are discussed in the following sections:

1. New Language under “New Facilities” Section, pages 19 & 20 of the ISWRMP: Appendix II

At the suggestion of the Ministry of Environment, new language has been introduced in Section A of the plan under the subsection titled “New Facilities (pages 19 and 20 of

Appendix II). The phrase “*establishes the scope and process for inclusion of new facilities within the plan*” has been added. This new phrase indicates that MV must be prescriptive in relation to calling for proposals for waste-to-energy facilities, regardless of whether they are in-region or out of region, for organics processing facilities and for land filling facilities.

This clause with the new phrase appears to be directed solely at MV in relation to the future development of waste management facilities owned and operated by MV. However, staff holds the view that this clause should be further amended such that the same provisions would apply to any privately owned and operated facility that may be contemplated as a potential recipient of waste originating from within the MV Region.

The additional waste tonnage that the region will be required to divert from landfills to achieve its 70% waste diversion target by 2015 is estimated to be 900,000 metric tonnes over and above its current diversion tonnage of 1.9 million tonnes per year.

Given the timeframe, by 2015, combined with the aggressive tonnage diversion requirements, MV should facilitate an increase in privately owned and operated facilities that would assist in providing adequate waste diversion processing capacity within the region. To this end, staff recommends the following wording for the “New Facilities” component under Section A of the Plan:

Municipal solid waste in the region may be directed for management to any new MV Regionally or privately owned and operated facility contemplated by this plan provided the new facility follows the process for development as outlined herein.....

2. New Language under “Goal 2” Section, page 28 of the ISWRMP: Appendix II

The following text is contained on page 28 under the Section titled “Goal 2”:

“In collaboration with municipalities, develop and implement a work plan for the diversion of organic waste, including food waste, from:

- i) single family residences by 2012;*
- ii) multi-family residences by 2015; and*
- iii) the ICI sector by 2015.”*

Given the proximity of the 2012 deadline for single family homes, many municipalities must renegotiate contractual terms with their existing curbside collection contractors.

For most municipalities in the Region, organics waste collection requires a significant change in the scope of the current collection service with the need for specialized waste containers, specialized equipment and a general increase in resources. Accordingly, staff recommend that the work plan for organics waste collection for single family residences be developed with a view to having such collection fully in place by 2015 rather than 2012, which is consistent with the multi-family and ICI sector dates and is consistent with the date on which a proposed ban on compostable organics at landfills is to take effect (also scheduled for 2015).

3. New Language under “Goal 2” Section, page 29 of the ISWRMP: Appendix II

While staff supports a ban on compostable organics at landfills by 2015, limiting the manner in which diverted waste material is processed is not recommended. MV and its member municipalities must determine the best use for its diverted waste. To this end, all viable waste treatment and diversion technologies must be considered, including, but not limited to, anaerobic digestion and waste-to-energy. On this basis, staff recommends that the language on page 29 of the Section titled “Goal 2” be further amended by deleting the words “*and all forms of waste-to-energy except anaerobic digestion*” such that the clause reads as follows:

“*Ban all compostable organics allowed in residential green bins from disposal to landfills by 2015.*”

At this time, the MV Region lacks adequate outlets for the processing of organic (food) waste. To achieve its 70% diversion target by 2015, MV has identified that approximately 400,000 metric tonnes of food waste must be diverted from landfill. Presently, the regional capacity for processing such waste is only 50,000 metric tonnes per year; this being the capacity of the Fraser-Richmond Soil and Fibre (FRSF) facility located in Richmond BC. This is a privately operated facility that joined with MV in a partnership arrangement in 2009. It is presently the sole “regional” facility approved to accept, process and sell 100% of the municipal curb side organics that it receives at its facility.

As Council is aware, the City in partnership with MV is developing a Surrey Organics Biofuel facility. This facility will have the capacity to handle 80,000 metric tonnes of organic waste per year, which will increase the annual regional organic processing capacity to 130,000 metric tonnes. With this level of diversion, a net gap of 270,000 metric tonnes of organics waste remains for diversion in relation to the Region achieving its 70% diversion goal by 2015. To this end, MV and its member municipalities must support, facilitate and be receptive to viable alternative organic waste diversion technologies. The establishment of Regional, municipal, and privately owned and operated organics processing facilities should be entertained to achieve the 2015 diversion target.

Estimated Magnitude of Costs Associated with the ISWRMP

As indicated in Corporate Report R154 (Appendix I), the ISWRMP goal of achieving a 70% waste diversion rate by 2015 should be supported; however, it will have financial impacts across the Region, including the following:

- Increased costs associated with regulating waste diversion from the *Institutional, Commercial & Industrial* and the *Demolition and Land Clearing* sectors;
- Increased costs associated with waste diversion compliance monitoring;
- Increased waste disposal costs;
- New costs associated with constructing and operating new MV infrastructure required to handle diverted waste, including potential waste-to-energy facilities; and
- Increased waste collection costs.

At the request of the Regional Engineers Advisory Committee (REAC), MV staff compiled a high level estimate of the costs associated with the Plan. It was estimated that direct expenditures by MV and member municipalities to minimize waste generation and maximize waste diversion and

material recovery (Goals 1 & 2 of the ISWRMP) would include \$170 million in one-time capital costs and \$40 million per year in operating costs. In addition, the one-time capital costs associated with recovering waste energy (Goal 3 of the ISWRMP) are estimated at \$440 million for the development of one 500,000 metric tonne per year in-region waste-to-energy facility.

The Plan anticipates that new costs will be funded through tipping fees associated with the disposal of remaining waste, through increased waste collection and drop-off related service costs required to carry out increased waste diversion activities and by way of revenues generated from the new energy streams. Tipping fees are funded by residents and businesses either directly at disposal facilities, through services fees paid to collection contractors, or through municipal utility fees when serviced by municipal collection systems.

Based on the Metro Vancouver population of 2.2 million, the above expenditures translate in the following per capita costs:

Capital costs associated with ISWRMP Goals 1 & 2: \$77 per capita

Annual operating costs associated with Goals 1 & 2: \$18 per capita

Capital costs associated with ISWRMP Goal 3 (waste-to-energy): \$200 per capita

These estimates are based on MV owning and operating waste diversion and waste-to-energy facilities. The capital costs could be decreased substantially if the facilities are privately owned and operated, although the reduction in capital costs would be offset by an increase in annual operating costs, which would then need to include capital amortization in the annual contract fees. It is clear that MV should explore the viability of privately owned and operated waste facilities within the region, not only to ensure that needed waste management capacity is available as previously discussed in this report, but to ensure that the lowest cost waste management processes are implemented that fully satisfy the goals of the Plan.

CONCLUSION

Based on the above discussion, it is recommended that Council:

- Endorse the current draft of the Integrated Solid Waste and Resource Management Plan (ISWRMP), attached as Appendix I to this report, subject to the following amendments:
 - the new wording under the “New Facilities” section of the ISWRMP being further amended to include the words “*Regionally or privately owned and operated facility*”; and
 - the new wording under Goal 2, Strategy 2.6, item 2.6.2 being further amended to:
 - indicate that region-wide diversion of organics generated by single family residences will occur “*by 2015*” rather than “*by 2012*”; and
 - delete the words “*all forms of waste-to-energy except anaerobic digestion*”.

- Reaffirm the resolution that Surrey Council adopted on July 12, 2010 that Metro Vancouver undertake an open market request for proposals for disposal of residual waste materials after diversion of recyclable materials that is not limited from the perspective of potential technologies and the number of facilities that can be constructed to address the regional waste stream and allows for both in-region and out-of-region options; and
- Direct staff to forward a copy of this report and the related Council resolution to Metro Vancouver as Surrey's input to the current draft of the ISWRMP.

Vincent Lalonde, P.Eng.
General Manager, Engineering

VL/RAC/brb/jkb

Appendix I: Corporate Report R154; 2010, titled Draft Regional Integrated Solid Waste and Resources Management Plan

Appendix II: July 2010 Red-lined Updated Version of the Integrated Solid Waste and Resource Management Plan

Appendix III: Reference Table: Compilation of Revisions to July 2010 ISWRMP with Staff Comments

Integrated Solid Waste and Resource Management

**A Solid Waste Management Plan for the Greater Vancouver
Regional District and Member Municipalities**

July 2010

www.metrovancouver.org

4200936

Table of Contents

Vision Statement	4
Goals and Targets	5
A. Integrated Solid Waste and Resource Management Plan	7
Guiding Principles	7
Sustainability	7
Integrated Resource Recovery	7
Resource Management Principles: The 5Rs	8
Process and Consultation	8
Aligning With Provincial Initiatives	8
Aligning with Federal Initiatives	10
Coordinating With Other Metro Vancouver Plans	10
Governance, Roles and Responsibilities	13
Geographic Scope	14
Approved Facilities	16
New Facilities	17
Flow Control	18
First Nations Lands	19
B. Goals, Strategies, Actions and Measures	20
Goal 1: Minimize Waste Generation	20
Goal 2: Maximize Reuse, Recycling and Material Recovery	23
Goal 3: Recover Energy from the Waste Stream after Material Recycling	33
Goal 4: Dispose of all Waste in Landfill After Material Recycling and Energy Recovery	38
Performance Measures and Adaptive Management	40
Financial Implications	43
Appendix A	
Long Term Monitoring Requirements for the Waste-To-Energy Facility in Burnaby	47
Figures	
Figure 1 Metro Vancouver Sustainability Framework	11
Figure 2 Key Connections with other Metro Vancouver Plans	12
Figure 3 Map of Plan Area	15
Figure 4 Map of Approved Facilities	17
Tables	
Table 1 Regional Waste Management – Net Expenditures	44

Vision Statement

Metro Vancouver has a vision to achieve what humanity aspires to on a global basis – the highest quality of life embracing cultural vitality, economic prosperity, social justice and compassion, all nurtured by a beautiful and healthy natural environment.

We will achieve this vision by embracing the principles of sustainability, not least of which is an unshakeable commitment to the well-being of current and future generations and the health of our planet, in everything we do.

As we share our efforts in achieving this vision, we are confident that the inspiration and mutual learning we gain will become vital ingredients in our hopes for a sustainable common future.

Building a Sustainable Livable Region

Building a sustainable, livable region is the overarching regional vision. Social, environmental and economic sustainability is, therefore, a fundamental objective in all Metro Vancouver activities: from the services we deliver through the management and strategic plans we develop and administer, to the various outreach activities we engage in pursuit of collaborative governance.

As we build and facilitate collaborative processes, including those that engage citizens, and enhance understanding of other levels of government, we are confident that the inspiration and mutual learning we gain will become vital ingredients in our hopes for a sustainable common future.

Goals and Targets

Goals

The overriding principle of Integrated Solid Waste and Resource Management Plan is the avoidance of waste through an aggressive waste reduction campaign and through the recovery of materials and energy from the waste that remains. In line with this principle, the Integrated Solid Waste and Resource Management Plan (ISWRMP) has four goals:

Goal 1: Minimize waste generation

Goal 2: Maximize reuse, recycling and material recovery

Goal 3: Recover energy from the waste stream after material recycling

Goal 4: Dispose of all remaining waste in landfill, after material recycling and energy recovery

The key strategies and actions to achieve the goals of the ISWRMP are set out in Part B, Goals, Strategies, Actions and Measures.

Targets

1) New language: adds per-capita waste reduction target; input from the City of Vancouver, and public consultation.

Reaching the primary goal of waste avoidance requires a reduction in the generation of waste. Metro Vancouver has few levers to directly control the volume of waste generated. So the target for waste reduction is one for the community as a whole to aspire to, rather than one the GVS&DD can be held wholly responsible for achieving. This plan therefore sets a target for the Metro Vancouver region to reduce the quantity of waste generated per capita within the region, calculated on a rolling 5 year average, to 90% or less of 2010 volumes by 2020.

2) Amended language: adds "minimum of" to the 70% diversion target, and adds 80% diversion target for 2020, and adds diversion targets by sector.

To reach the second goal of waste reuse, recycling and material recovery, as much as possible must be diverted away from the waste disposal stream and into programs aimed at reuse, recycling and material recovery. The second target of the ISWRMP is to increase the regional diversion rate from an average of 55% to a minimum of 70% by 2015 and an aspirational target of achieving 80% by 2020 assuming there will be sustained markets for all diverted material.

The overall 70% diversion target implies the following approximate diversion rates by sector:

- Multi-family 30%
- Single family 65%
- Institutional, commercial and industrial 70%
- Demolition, land clearing and construction 80%

~~The target of the ISWRMP is to increase the regional diversion rate from an average of 55% to 70% by 2015~~

Conventionally it has been assumed that the 5Rs hierarchy approximates the sequence of processes in waste management and the goal of reducing, reusing or recycling waste to the maximum extent possible has been measured as the rate of 'diversion' of waste from reaching the fifth step in the hierarchy – the disposal of residuals. Modern reality is more complex. As a result, using the conventionally defined 'diversion rate' includes some source separated material that is used as fuel still being considered 'recycled' while some material that is recycled after incineration is still considered 'disposed'.

This plan is driven by the underlying principles of sustainability but, for the sake of historic comparability, continues to use the conventional definition of 'diversion rate'.

A. Integrated Solid Waste and Resource Management Plan

Guiding Principles

The plan follows the sustainability principles set out in Metro Vancouver's Sustainability Framework, the principles of Integrated Resource Recovery and the 5R hierarchy of resource management.

Sustainability

Sustainability encompasses a long-term commitment to economic prosperity, community well-being and environmental integrity. It is at the core of Metro Vancouver's vision for the future, and provides the foundation for the development of the region's management plans.

The Metro Vancouver Sustainability Framework identifies three overarching principles which state that decision making must:

- Have regard for both local and global consequences, and long-term impacts
- Recognize and reflect the interconnectedness and interdependence of systems
- Be collaborative

These provide the foundation for the three operating principles that guide Metro Vancouver:

- Protect and enhance the natural environment (Conserve and develop natural capital)
- Provide for ongoing prosperity (Conserve and develop economic capital)
- Build community capacity and social cohesion (Conserve and develop social capital)

A solid waste management plan which follows these principles will seek to ensure our individual and collective behaviour does not generate avoidable or unnecessary material waste and will seek systems and technologies which recover and recycle materials and recover energy.

Where investment or reinvestment in infrastructure is required, that infrastructure will be resilient, be adaptable to climate change, lessen the region's dependence on non-renewable energy sources, and protect the environment.

Integrated Resource Recovery

Integrated Resource Recovery is an approach to designing and managing urban systems, particularly utilities, to generate synergies which enable the 'waste' from one system to become 'resources' for another.

These traditional wastes are untapped resources. If accessed and used appropriately, they can help preserve non-renewable resources, stretch the capacity of existing infrastructure, save energy, generate revenue, protect the environment and reduce greenhouse gas (GHG) emissions.

Resource Management Principles: The 5Rs

The principles of the internationally recognized 5R hierarchy also emphasize the value of waste as a resource. The hierarchy sets out the relative value of different methods of waste management:

- Reduce waste at source
- Reuse where possible
- Recycle products at the end of their useful life
- Recover energy or materials from the waste stream
- Manage Residuals in an environmentally sound manner

3) *New language: public health principles added; in response to input from health authorities*

Public Health Principles

- Emphasis on investing in upstream preventative solutions as opposed to downstream problem management. In the case of managing the waste stream, this principle requires increasing investment towards reducing waste generation.
- Fairness and equity. The costs and benefits of the plan will be distributed fairly among population groups.
- Transparency. Decisions are made through processes that enable meaningful public input throughout the planning and implementation phases, including final decisions on waste management facility, technology and site selections.
- Sustainability. The plan will sustain population health and wellness not only for residents of MV but also for all British Columbians and globally.

Process and Consultation

All actions included in this plan will be undertaken in consultation and cooperation with municipalities, senior government, First Nations, health authorities, the business community, and the public.

4) *Amended language: adds 5 year review at suggestion of Ministry of Environment*

As the population grows and circumstances change, the ISWRMP will be reviewed and revised. An ISWRMP progress report will be made every two years and a comprehensive performance review of the plan undertaken every five years, with a full plan review and update every ten years.

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Aligning With Provincial Initiatives

This is a provincially mandated plan. The objectives set out in the 1995 Greater Vancouver Regional Solid Waste Management Plan were set by the Provincial Government. These objectives were:

- To reduce per capita garbage disposal in the year 1995 by at least 30% from 1990 levels

- To similarly reduce per capita garbage disposal in the year 2000 by at least 50% from 1990 levels
- To responsibly manage residuals

These objectives have been met.

The updated ISWRMP is guided by principles that are aligned with current provincial policies and positions, ensuring that Metro Vancouver's and senior governments' environmental and fiscal objectives and actions are mutually supportive and successful.

Key provincial plans and policies supported by the ISWRMP include the:

5) New language: adds reference to BC Air Action Plan at suggestion of Technical Forum

• **BC Air Action Plan.** The Air Action Plan seeks to improve air quality across B.C. by promoting clean transportation, clean industry and clean communities. The ISWRMP will contribute to meeting the goals of this program by managing waste locally, imposing the strictest air quality standards on all facilities and reducing emissions in the community through district energy systems.

• **BC Climate Action Plan.** This plan sets a provincial target of 33% less greenhouse gas emissions by 2020, and 80% fewer by 2050. The ISWRMP will contribute to meeting these targets by facilitating waste reduction and by treating waste as a resource to be reused, recycled or recovered.

• **BC Energy Plan - A Vision for Clean Energy Leadership.** The Energy Plan sets goals for clean, self-sufficient electricity production including "clean energy leadership" and energy self-sufficiency by 2016. The ISWRMP seeks to expand the generation of electricity and biofuels from municipal solid waste as well as the recovery of heat for use in industrial or district heating systems.

6) New language: adds reference to BC Recycling Regulation; recommendation of Reference Panel

• **BC Recycling Regulation.** This regulation provides a legal framework for establishing extended producer responsibility (EPR) programs managed by industry to promote product stewardship within the province of British Columbia. The underlying goal of this regulation is for producers to accept full life-cycle cost accounting for their products. This would see the costs of the end-of-life management of products treated similarly to other factors of production and incorporated into product prices. Successful EPR shifts the expenses associated with product end-of-life management from taxpayers to producers and consumers. The ISWRMP supports the principles of EPR and includes numerous actions to accelerate EPR program development and implementation.

• **A Guide to Green Choices - Ideas and Practical Advice for Land Use Decisions in BC Communities.** This guide expressed the need for "sustainable infrastructure". The long-term sustainable management of existing and future infrastructure investments requires integrated, innovative solutions. The ISWRMP contains actions that support sustainable infrastructure, such as clean energy from district energy systems.

7) *Deletion: program has been discontinued*

~~• **LiveSmart BC.** This program aims to support low-carbon communities through incentives for energy savings and GHG reduction in homes and businesses, on the road, and in the community.~~

~~The ISWRMP facilitates opportunities for the residential and commercial sectors to reduce their contribution to GHG emissions through waste reduction, reuse, recycle and regional organic waste management.~~

• **BC Bioenergy Strategy.** The Strategy encourages the production of fuel from biomass. The ISWRMP builds upon existing efforts involving the recovery of methane from landfills. It also promotes additional diversion of biomass, such as food residues and treated wood, for use as renewable sources of energy. Opportunities to integrate liquid and solid waste management also support the BC Bioenergy Strategy.

• **Landfill Gas Management Regulation.** This regulation requires landfills to consider designs that optimize methane capture, reducing greenhouse gas emissions. Existing and any future Metro Vancouver landfills under the ISWRMP will follow this regulation, contributing to the climate change solution.

In partnership with municipalities and the private sector, Metro Vancouver's initiatives in all of these areas will reduce greenhouse gas emissions, diversify the region's sources of energy, increase renewable energy sources, and increase the region's energy independence.

8) *Deletion: Diagram became too complex with references to additional provincial programs*

~~FIGURE 1: KEY CONNECTIONS BETWEEN PROVINCIAL PLANS AND METRO VANCOUVER'S INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN~~

9) *New language: added at suggestion of the Reference Panel*

Aligning with Federal Initiatives

• **CCME Canada Wide Action Plan for Extended Producer Responsibility.** The Canadian Council of Ministers of the Environment (CCME) have adopted a waste management approach which extends the responsibility of producers for management of products to the end of the product life. Through the Canada-wide Action Plan for EPR, the CCME and the province of British Columbia are working towards the development and implementation of additional EPR programs intended to have producers accept full life-cycle cost accounting for their products. This would see the costs of the end-of-life management of products treated similarly to other factors of production and incorporated into product prices. The draft ISWRMP supports the principles of EPR and includes numerous actions to accelerate EPR program development and implementation.

Coordinating With Other Metro Vancouver Plans

The Sustainable Region Initiative provides a framework for linking the ISWRMP with the region's other plans, as shown in Figure 1. It also establishes links across regionally mandated plans and with initiatives that are executed by other partners.

The ISWRMP identifies synergies with Metro Vancouver’s other utilities and plans, to make the best use of society’s resources, and to minimize the region’s impact on the environment. Figure 2 shows the connections between the ISWRMP and other regional plans.

The ISWRMP includes coordinated actions with the Integrated Liquid Waste and Resource Management Plan, chosen to identify opportunities to make best use of the resources generated from the two waste streams. For example, organic municipal solid waste, like waste food, can potentially be co-digested with sewage sludge.

The principles guiding the ISWRMP and the connected goals and actions will also help achieve objectives in the Air Quality Management Plan and Metro Vancouver 2040, the region’s Regional Growth Strategy. The ISWRMP will minimize Metro Vancouver’s contribution to climate change by reducing the disposal of untreated waste in landfills, by recovering energy in the form of heat for district heating, and by reducing the use of fossil fuels for space heating. These steps will assist in building compact, complete communities using clean energy for district heating.

Figure 1: Metro Vancouver Sustainability Framework

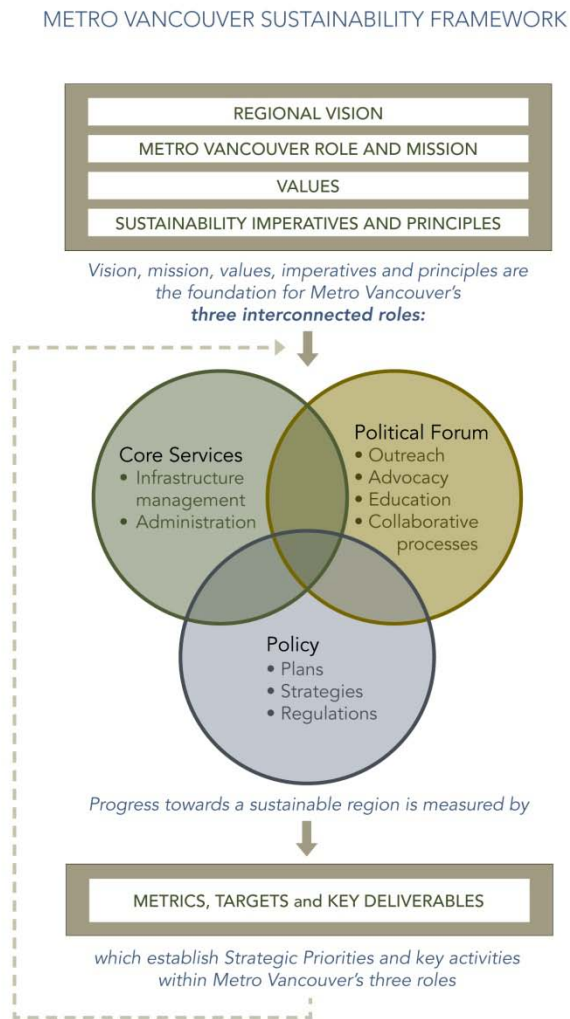
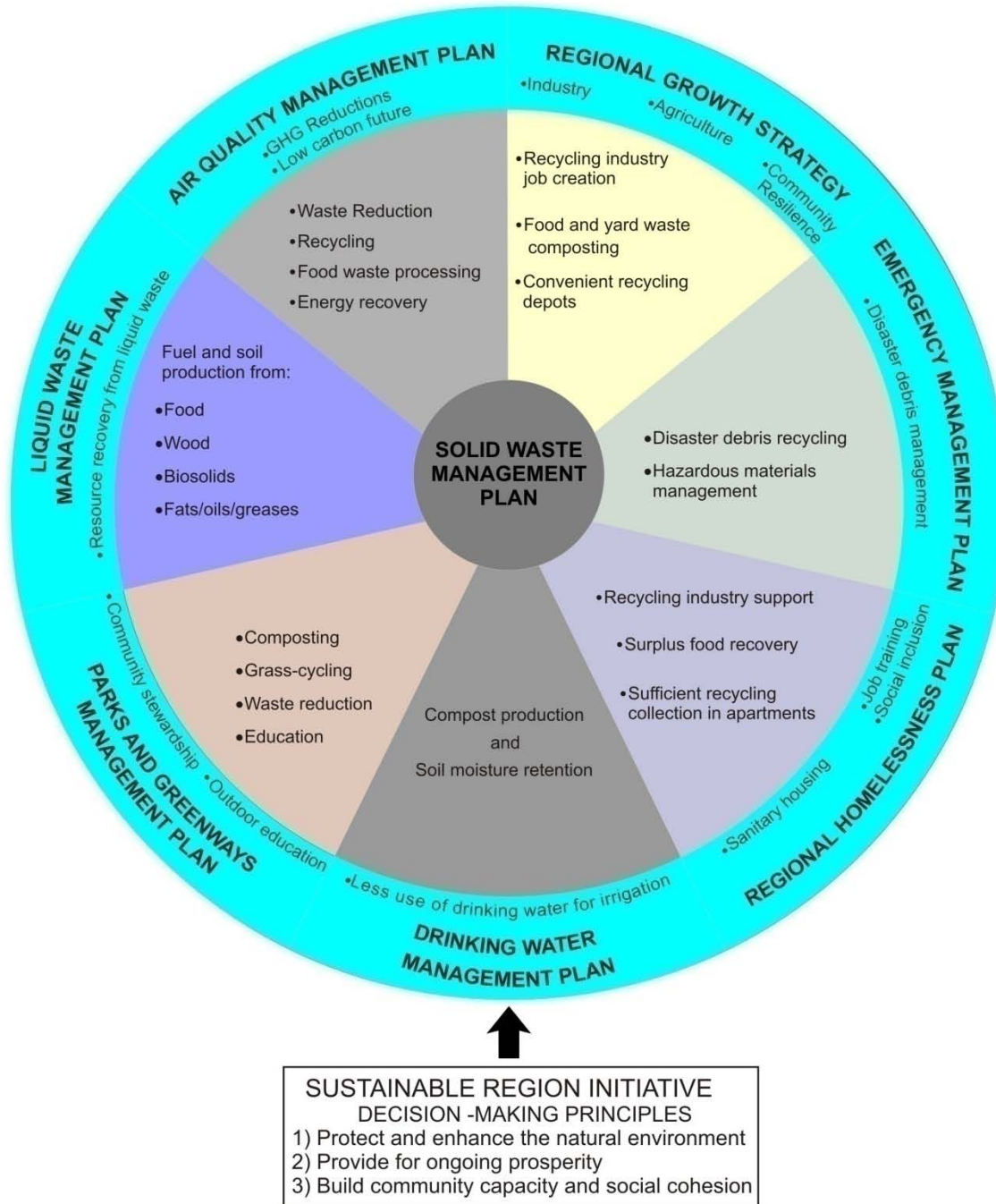


Figure 2: Key Connections between Metro Vancouver’s Integrated Solid Waste and Resource Management Plan and Other Metro Vancouver Plans



Governance, Roles and Responsibilities

Solid waste management plans are authorized and regulated through the BC Environmental Management Act. Once each updated plan is approved, it becomes a regulatory document for solid waste management.

Metro Vancouver and member municipalities work collaboratively to provide waste management services to the region. Metro Vancouver coordinates the long-range planning process for recycling and disposing of solid waste in the region. Metro Vancouver also funds and manages the operating contracts for the transfer stations, waste-to-energy facility and landfill (with the exception of the Vancouver South Transfer Station and the Vancouver Landfill which are owned and operated by the City of Vancouver) that make up the region's integrated solid waste management system.

10) New language: clarifies legal precedence of Plan over existing agreements

In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of these facilities. Where conflicts may exist between agreements related to such facilities and this plan, including the Tri-Partite Agreement between Delta, Vancouver and Metro Vancouver, this plan takes precedence.

Municipal solid waste (MSW) includes refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources as outlined in the Environmental Management Act.

For management purposes, waste is generated from three sectors: residential (from both single-family units and multi-family units); industrial, commercial and institutional (ICI); and demolition, land clearing and construction (DLC). Member municipalities operate or co-ordinate the collection of recyclables and garbage and in some cases yard and garden waste from the single-family residential sector and some ICI and multi-family residential sources. Recycling from multi-family residences is also collected by municipalities, but much of the ICI and multi-family residential garbage collection services are provided by the private sector. ICI recycling is collected almost exclusively by private haulers. The third sector, DLC, is primarily self-managed with businesses and non-profit societies providing recycling, transferring and/or disposal services.

The management of household hazardous wastes is carried out by the Province primarily through Extended Producer Responsibility (EPR) programs and the Hazardous Waste Regulation. Provided financial and liability issues are satisfied, Metro Vancouver and member municipalities will cooperate with the Province and industry groups to provide a comprehensive household hazardous waste management program.

Recycling processing facilities in the region are primarily privately run businesses, as are the brokers who facilitate the movement of recyclables to end markets inside and outside of the region.

The extent and complexity of the solid waste systems require close coordination among the following groups:

Federal Government

- The Federal Government regulates waste management facilities under federal jurisdiction

Provincial Government

- Various ministries have regulatory authority related to waste management

First Nations

- First nations are an order of government with rights and responsibilities

Local Health Authorities

- Local health authorities have various interests and responsibilities related to the waste management process

Local Government

- Metro Vancouver is responsible for developing and ensuring that the ISWRMP is implemented and is required to report on ISWRMP progress
- Member municipalities provide local waste management services and implement municipal actions in the ISWRMP

Private Sector

- Private sector businesses generate waste which requires management under the ISWRMP
- Private sector haulers, material brokers, recyclers and others provide services which make the implementation of an integrated waste management system possible

Non-profit Sector

- Provides voluntary services to segments of the waste generating public

Residents

- Generate waste either as private individuals or as contributors to institutional, commercial, industrial, demolition, land clearing or construction activities
- Responsible for carrying out proper waste reduction, recycling and disposal activities

Geographic Scope

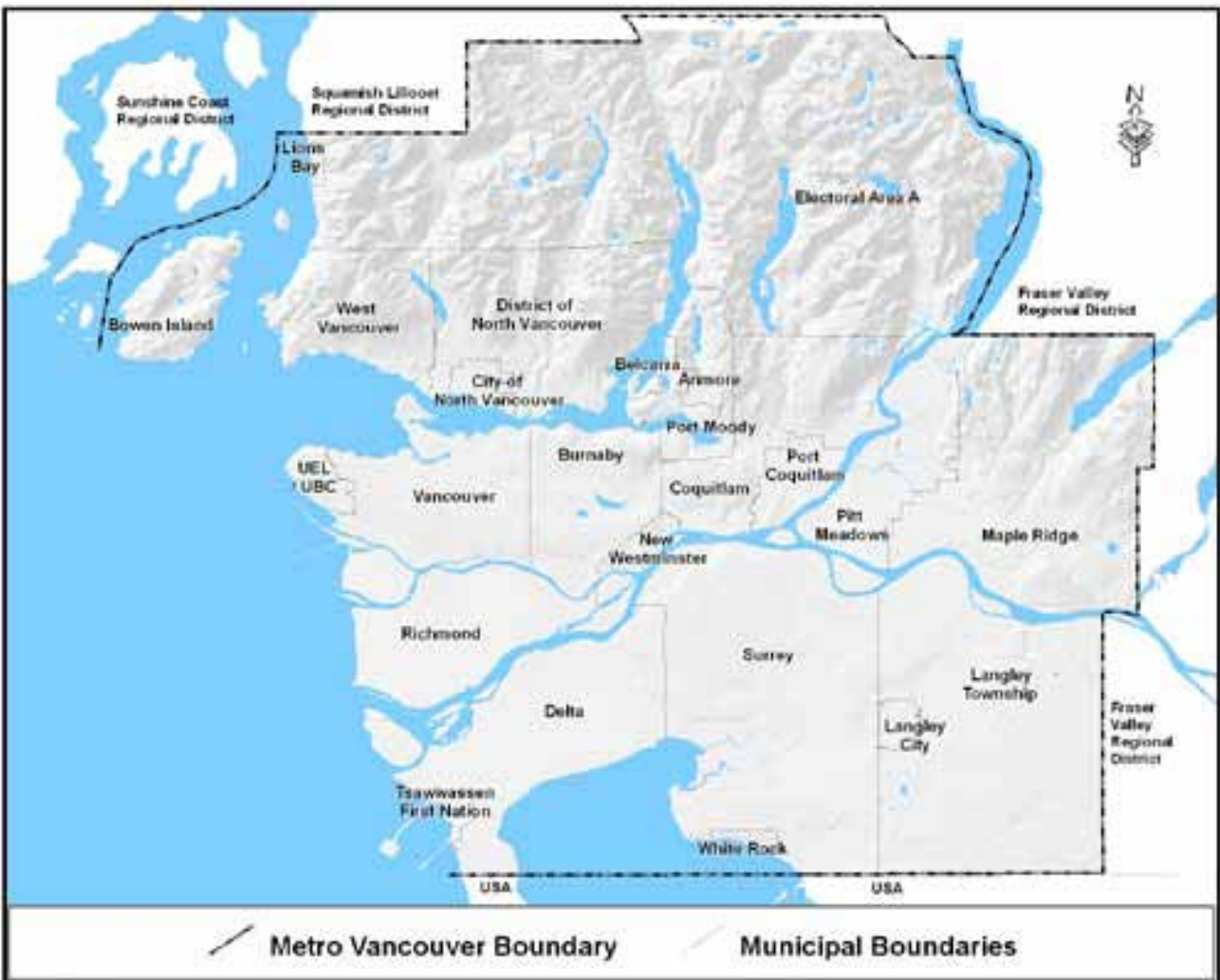
The ISWRMP applies to the geographic area of Metro Vancouver (see Figure 3). All strategies and actions in the ISWRMP apply to the following members of the Greater Vancouver Regional District.

Village of Anmore
Village of Belcarra
Bowen Island Municipality
City of Burnaby
City of Coquitlam
Corporation of Delta
City of Langley
Township of Langley
Village of Lions Bay
District of Maple Ridge
City of New Westminster
City of North Vancouver
District of North Vancouver
City of Pitt Meadows
City of Port Coquitlam

City of Port Moody
City of Richmond
City of Surrey
Tsawwassen First Nation
City of Vancouver
District of West Vancouver
City of White Rock
Electoral Area A – which includes the west side of Pitt Lake, the northern portion of Indian Arm, a portion of land between the District of West Vancouver and Squamish Lillooet Regional District, Bowyer, Passage and Barnston islands, the University Endowment Lands (including Pacific Spirit Regional Park), and the University of British Columbia

In addition, solid waste management services are provided to the City of Abbotsford through contract.

Figure 3: Map of Plan Area



Approved Facilities

Municipal solid waste in the region can be directed for management to any approved disposal facility identified in the ISWRMP.

Approved disposal facilities include the:

- Waste-to-Energy facility in Burnaby
- Vancouver Landfill
- Cache Creek Landfill
- Any disposal facility licensed by Metro Vancouver under the Greater Vancouver Sewerage and Drainage District Municipal Solid Waste and Recyclable Material Regulatory Bylaw No. 181, 1996 as amended by Bylaw No. 183, 1996

11) *Deletion: moved to New Facilities Section at suggestion of Ministry of Environment*

~~• Any new waste-to-energy facility established through a competitive process and subject to an environmental assessment as required by provincial and federal regulation~~

12) *New language: added at the request of Ministry of Environment*

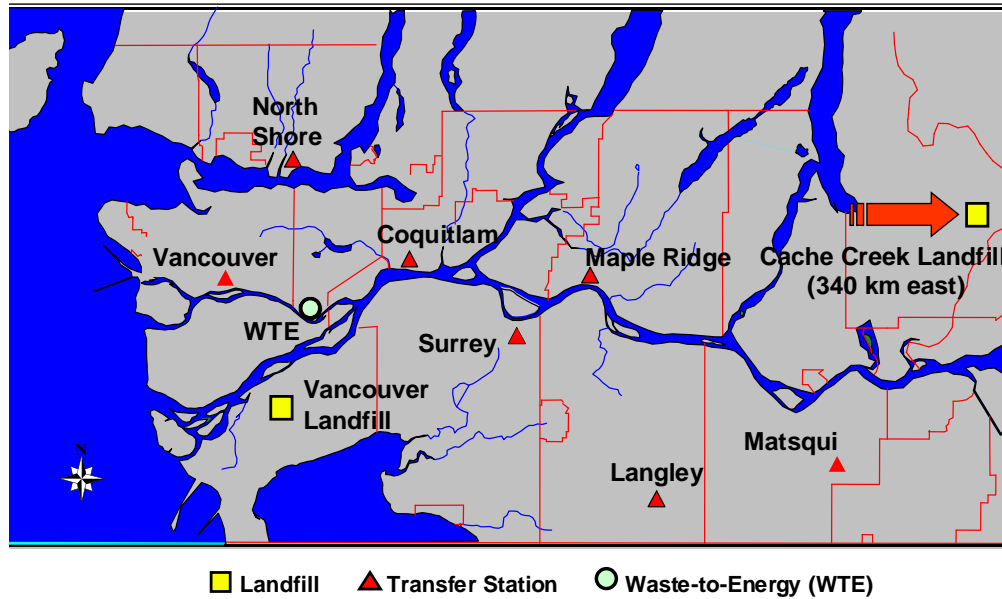
Metro Vancouver will work with the Province to map and catalogue private and public landfills operating or closed in the Metro Vancouver region.

In addition to the approved disposal facilities, the following publically owned transfer stations are an integral part of the Metro Vancouver integrated waste management system:

- North Shore Transfer Station
- Vancouver South Transfer Station
- Coquitlam Transfer Station
- Surrey Transfer Station
- Langley Residential Transfer Station
- Maple Ridge Residential Transfer Station
- Matsqui Transfer Station

The locations of the Metro Vancouver and City of Vancouver facilities are shown in Figure 4.

Figure 4: Map of Approved Facilities



New Facilities

13) *New language: establishes scope and process for inclusion of new facilities in this plan; included at the suggestion of the Ministry of Environment*

Municipal solid waste in the region may be directed for management to any new facility contemplated by this plan provided the new facility follows the process for development as outlined herein.

New facilities specifically contemplated in this plan include:

- Any new organics processing facility established pursuant to Goal 2 of this plan
- Any new waste-to-energy facility located within the region established pursuant to Goal 3 of this plan
- Any new waste-to-energy facility located outside the region established pursuant to Goal 3 of this plan
- Any additional landfill pursuant to Goal 4 of this plan

Process for development of new facilities shall include but not be limited to:

- Appropriate procurement process
- Environmental assessment, including an assessment of human health risk acceptable to the applicable health authority, as may be required by provincial and federal regulations
- Suitable public consultation program as may be required by environmental assessment process

The Ministry of Environment and health authorities will be informed and consulted as appropriate regarding the addition of new waste management facilities.

- 14) *New language: provision added to allow Ministry of Environment to vary waste flows and contingency plans if other regional districts were to be serviced by a new facility contemplated in this plan.*

Establishment of new facilities may also be performed with consideration for provincial requirements in addition to Metro Vancouver's regional needs. If new facilities are established to service Metro Vancouver and any other regional district, references in this plan to waste flows, contingency plans, refer only to quantities of waste from Metro Vancouver. The Ministry of Environment may vary these provisions to accommodate, and only accommodate, waste management requirements of other regional districts.

The addition of new disposal facilities not contemplated in this plan will require an amendment to the plan. The addition of new facilities which are not disposal facilities will not necessitate an amendment to this plan.

- 15) *New language: necessary to achieve the objectives of managing waste locally, avoiding overbuilding waste-to-energy facilities and undermining Goals 1 and 2, and reducing waste flow to the Vancouver Landfill; arising from the public consultation and the Corporation of Delta submission*

Flow Control

To ensure the sustainability principles embodied within this Plan are fulfilled Metro Vancouver will retain management control of regional disposal facilities. By retaining management control, all waste reduction and diversion goals can be applied uniformly at all regional disposal facilities to ensure equity for all residents and businesses within the region while attaining the goals of this plan.

In addition to the requirement for waste to be directed to facilities approved under this plan, Metro Vancouver may choose to act to reduce the flow of waste to unauthorized facilities which may undermine the waste reduction and diversion goals of this plan. These flow control initiatives include but are not limited to:

- Split fee bylaw
- Franchising of waste collection services
- Licensing of waste collection service providers

If total waste flows are below the capacity of existing and planned facilities, waste disposal facilities will be utilized as follows:

- Total waste flows in excess of 780,000 tonnes per year: the Vancouver Landfill will be operated to absorb flows in excess of 780,000 tonnes;
- Waste flows in excess of 500,000 tonnes per year but less than 780,000 tonnes per year: the Vancouver Landfill be operated only to absorb residuals from the waste to energy plants and as an emergency system in the event that the waste to energy plants cannot absorb waste flows, and the Burnaby facility would have the three furnace lines progressively shut down or converted to alternate fuels as waste flows declined;

- Waste flows below 500,000 tonnes per year: the Vancouver Landfill would continue to operate to absorb residuals from the waste to energy plants and as an emergency system in the event that the waste to energy plants cannot absorb waste flows, the waste-to-energy facility in Burnaby would be decommissioned or converted to alternate fuels and the new waste to energy facilities would be progressively downscaled or converted to alternate fuels as waste flows decline.

First Nations Lands

Unknown quantities of waste from Metro Vancouver, primarily from the DLC sector, are disposed in landfills located on First Nations lands both outside and inside the Metro Vancouver geographical area. Metro Vancouver has no jurisdiction for these landfills.

B. Goals, Strategies, Actions and Measures

Goal 1: Minimize Waste Generation

The following strategies and actions are proposed to achieve this goal:

STRATEGY 1.1

Advocate that senior governments transfer additional waste management responsibilities to producers and consumers

The costs and responsibilities of waste management have historically been borne by local governments and taxpayers. The responsibility for the costs and risks to manage end-of-life products should progressively transfer to the manufacturers of goods and the consumers that use them to provide the appropriate market mechanism to encourage more sustainable manufacturing and consumer choices.

METRO VANCOUVER WILL:

16) *New language: added strong leadership role for Metro Vancouver in advocacy and tangible support for measures to achieve waste reduction; reflective of public consultation input and suggestion from Health Authorities.*

1.1.1 Advocate that senior governments progressively move towards the prohibition of the manufacture and distribution of non-essential, non-recyclable materials and products. 2011

1.1.2 Advocate that senior governments prohibit the manufacture and distribution of non-recyclable packaging. 2011

1.1.3 Strongly advocate for EPR programs to reduce waste disposal through implementation of design-for-environment principles, and best management practices that focus on waste reduction, reuse, and recycling. Offer staffing support for and partnership with Ministry of Environment to help accelerate EPR. 2011

1.1.4 Work with other municipalities and regions across BC, Canada, and internationally, to advocate for more development by senior governments in encouraging and developing incentives, including regulation, that promote design of products with an emphasis on reuse and recycling (cradle-to-cradle design). 2011

1.1.5 Participate on Federal EPR initiatives such as the Canadian Council of Ministers of Environment (CCME) Extended Producer Responsibility Task Force, to develop national guidelines for sustainable packaging. *Ongoing*

1.1.6 Participate on industry stewardship advisory committees. *Ongoing*

1.1.7 Participate on the BC Product Stewardship Council to assist in evaluating existing and developing new EPR programs. *Ongoing*

17) *New language: Waste projections will consider future trends including EPR, recommendation of Reference Panel*

1.1.8 Waste projections will consider future trends in population, generation, and management, including EPR. Ongoing

MUNICIPALITIES WILL:

1.1.9 Partner with Metro Vancouver in support of actions 1.1.1 through 1.1.7 *2011 and Ongoing*

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

18) *Amended language: Clarifies it is Ministry of Environment's responsibility to accelerate EPR, recommendation of Reference Panel*

1.1.10 Ministry of Environment to accelerate EPR program development and implementation. Ongoing

~~1.1.10 Ministry of Environment to create a formal partnership with Metro Vancouver representation, to accelerate EPR program development and implementation. 2010~~

19) *New language: added provisions related to the transition to EPR; at the suggestion of the Reference Panel*

1.1.11 Include Metro Vancouver and its member municipalities in the negotiations with producers regarding future EPR programs to ensure that appropriate consideration is given to the existing convenient curb-side collection systems. 2010

1.1.12 Ensure that the waste recovered under EPR programs will be properly managed in the region and that such materials will not be exported without adequate knowledge of and control over its eventual disposition. Ongoing

STRATEGY 1.2

Reduce or eliminate materials entering the solid waste system which hinder or limit the opportunities to achieve reuse, recycling, or energy recovery, or that may exacerbate environmental impacts of disposed residuals

Some inputs to the solid waste stream may hinder or limit the opportunities to achieve reuse, recycling, or energy recovery, or may exacerbate environmental impacts of disposed residuals. These inputs will be identified and programs developed to reduce or eliminate them. This strategy also applies to Goal 2.

METRO VANCOUVER WILL:

1.2.1 Work with facility operators, local municipalities and the recycling industry to introduce material bans after alternatives are identified and suitable public information programs. *Ongoing*

STRATEGY 1.3

Provide information and education on options to reduce waste

20) *New language: Use forms of communication that address the barriers created by multiple languages; recommendation of Reference Panel*

The amount of waste we produce is directly linked to the amount and type of goods and services we consume. Providing the public and businesses with an awareness of the consequences of unsustainable behaviour and tools and incentives to change will assist in reducing the generation of waste. Information and education will seek forms of communication which address the barriers created by multiple languages.

METRO VANCOUVER WILL:

1.3.1 Develop and deliver a community based social marketing program to inform and educate citizens on waste reduction opportunities including schools. *Ongoing*

21) *Amended language: added 80% diversion target by 2020; reflective of public input*

(a) Target a minimum of 70% diversion goal by 2015 over all sectors and an aspirational goal of 80% by 2020 to be featured in communication materials. *Ongoing*

~~(a) Promote a minimum of 70% diversion goal by 2015 over all sectors—feature in communication materials. *Ongoing*~~

1.3.2 Develop and deliver a community based social marketing business education plan, including business guides and other outreach programs to inform and educate businesses on waste reduction opportunities. *2011*

22) *New language: evolution of Metro Vancouver’s “MetroVancouverRecycles.org” and “3Rs.ca” initiatives*

1.3.3 Develop a national zero waste marketing council so that cities across Canada can pool resources and develop common messaging, with national impact, on the need to reduce waste, resulting in informed and educated citizens on waste reduction opportunities. *2011*

MUNICIPALITIES WILL:

1.3.4 Partner with and assist Metro Vancouver in the development and delivery of public and business information and education programs. *Ongoing*

Goal 2: Maximize Reuse, Recycling and Material Recovery

Strategies to achieve this goal focus on proactive approaches to reuse, increased recycling effort and implementation of a region-wide food waste composting program.

STRATEGY 2.1

Increase the opportunities for reuse

Increasing the opportunities for individuals to reuse more materials involves increasing convenience and reducing impediments.

METRO VANCOUVER WILL:

2.1.1 Investigate financial and regulatory barriers which prevent or discourage the reuse of Materials. [2011](#)

2.1.2 Investigate the effectiveness and adequacy of existing material exchange networks. [2011](#)

2.1.3 Bring forward appropriate measures which respond to the findings of 2.1.1 and 2.1.2 [2011](#)

23) *New language: include community groups; recommendation of Reference Panel*

2.1.4 Enhance partnerships with the Province, industry, academia and community groups to research and develop solutions to overcome barriers to reuse and recycling and new opportunities to re-engineer recycled material. [2011](#)

MUNICIPALITIES WILL:

2.1.5 Work with Metro Vancouver to give effect to Strategy 2.1 [Ongoing](#)

STRATEGY 2.2

Increase the effectiveness of existing recycling programs

Use the existing infrastructure effectively to achieve higher recycling rates.

METRO VANCOUVER WILL:

2.2.1 Implement disposal bans on materials that limit opportunities to achieve reuse, recycling, or energy recovery. [Ongoing](#)

(a) Work with facility operators, local municipalities, senior governments and the recycling industry to determine the impact and source of components of the waste stream, the consequence and feasibility of banning the disposal of materials with the most negative impacts and the most suitable recycling options for those materials. [Ongoing](#)

24) *Amended language: expands disposal ban enforcement; recommendation of Reference Panel*

(b) Expand the monitoring and enforcement of disposal bans and enhance with effective communications to raise awareness of the bans. [2011](#)

~~(b) Continue the monitoring and enforcement of the disposal bans. [Ongoing](#)~~

(c) Analyse the effectiveness of disposal bans and possible alternative enforcement models including enforcement at source. *2010*

(d) After suitable public information programs, expand disposal bans to include materials encompassed by new EPR programs and material for which new recycling markets are developed. *Ongoing*

2.2.2 Provide ongoing information for businesses and residents of recycling opportunities. *Ongoing*

(a) Continue and upgrade a regional web-based source of information on recycling opportunities for businesses and residents. *Ongoing*

(b) Keep municipalities fully informed as to recycling collection and drop off facilities and changes to policies and facilities. *Ongoing*

(c) Provide outreach services. *Ongoing*

25) New language: Adds intention to seek harmonization; recommendation of Reference Panel.

(d) Work with other information sources to achieve maximum harmonization possible. Ongoing

2.2.3 Increase the efficiency and consistency of recycling collection services across the region. *2012*

(a) Work with municipalities to review materials accepted for recycling from residential and ICI sources. *2012*

26) New language: Adds the possibility of model policies and bylaws; based on suggestion from Health Authorities.

(b) In collaboration with municipalities, undertake a business case review of the residential and ICI waste and recycling collection services over the region to determine and implement the appropriate level of consistency between municipalities. Where appropriate, Metro Vancouver will develop model policies or bylaws to assist municipalities in achieving consistency. 2012

~~*(b) In collaboration with municipalities, undertake a business case review of the residential and ICI waste and recycling collection services over the region to determine and implement the appropriate level of consistency between municipalities. 2012*~~

27) New language: adds economic instruments to promote recycling; based on public consultation input and reference panel

(c) Analyse the effectiveness of pricing strategies and other economic instruments to encourage additional recycling. 2012

2.2.4 Establish Eco-Centres. *Ongoing*

28) Amended language: Clarify the need for initial consultation and definition process for Eco-Centres; based on public consultation and municipal input.

29) *New language: Clarify that the responsibility for operating and funding Eco-Centres will be determined by stakeholder work group; direction of Waste Management Committee.*

(a) Establish a stakeholder and municipal work group to determine the scope, terms and conditions including the responsibility for funding and operating, and the relationship to existing and planned EPR programs and municipal recycling depots for participating municipalities and industries. 2010

~~(a) Establish a work group to determine the terms and conditions for participating municipalities and industries and the means of integrating Eco-Centres into Metro Vancouver's transfer stations and municipal depot systems. Ongoing~~

30) *Amended language: clarify Eco-Centres are not limited to a few large facilities; response to input from public*

(b) Develop the model of Eco-Centres to include numerous, small scale, one-stop-drop centres for recycling and small quantity drop-off disposal. Ongoing

~~(b) Develop the model of Eco-Centres, new one-stop-drop centres for recycling. Ongoing~~

(c) With municipalities, determine the terms and conditions for participating municipalities and industries and develop appropriate business cases. *Ongoing*

31) *Amended language: clarifies commitment to establishing facility in Surrey; municipal input*

32) *New language: Clarify that the responsibility for operating and funding Eco-Centres will be determined prior to establishment; direction of Waste Management Committee.*

(d) After determining terms and conditions including the responsibility for funding and operating, establish the first Eco-Centre in Surrey to replace commitment for residential drop off facility in the 1995 Plan. 2011

~~(d) After determining terms and conditions, establish the first Eco-Centre in Surrey. Ongoing~~

(e) Progressively expand the Eco-Centre system across the region as municipal business cases determine. *Ongoing*

2.2.5 Promote recycling at festivals and events. *Ongoing*

33) *Deleted: pilot studies complete*

~~(a) Complete pilot studies on Zero Waste initiatives at festivals and events. Ongoing~~

(a) Develop a Zero Waste toolkit for festivals and events. *Ongoing*

(b) Continue to work with municipalities, EPR groups and local community groups to implement waste minimization and recycling at community festivals and events, including conferences and tradeshows. *Ongoing*

(c) Provide outreach services. *Ongoing*

2.2.6 Work with school districts and individual schools to promote waste reduction and recycling.
Ongoing

(a) Develop instructional programs that encourage waste reduction and recycling both within the schools and at home. *Ongoing*

MUNICIPALITIES WILL:

2.2.7 Work with Metro Vancouver on actions designed to:

34) *Amended language: clarifies municipal commitment; response to public input*

(a) implement effective disposal bans for collection of municipal waste at source; Ongoing

~~*(a) implement disposal bans; Ongoing*~~

(b) inform businesses and residents of recycling opportunities; *Ongoing*

(c) increase the efficiency and consistency of recycling collection services across the region;
Ongoing

(d) establish Eco Centres; *Ongoing*

(e) promote recycling at community events and festivals; *Ongoing*

(f) work with school districts and individual schools to promote waste reduction and recycling
Ongoing

STRATEGY 2.3

Provide opportunities to increase private sector recycling

There is a shortage of recycling processing capacity for many materials within the region. Metro Vancouver and member municipalities can assist in addressing this shortage by using tools at their disposal to change the business environment so that the private sector can increase capacity.

METRO VANCOUVER WILL:

2.3.1 Facilitate the siting of private sector recycling activities. *2012*

(a) Review the GVS&DD Solid Waste Regulatory Bylaw to facilitate the siting of municipal solid waste facilities that meet municipal bylaws. *2012*

2.3.2 Foster research and market development for recycled materials. *Ongoing*

(a) Evaluate a business case for a regional scale recyclable service delivery model. *2010*

(b) Review desirability, feasibility and opportunity for establishing a non-profit organization to facilitate the development of recycling businesses and markets, along the lines of the 'London Remade' model in the U.K. *2012*

(c) Subject to the results of 2.3.2 (a) and (b), establish a regional role in processing and marketing of recycled materials, a land acquisition strategy for required recycling facilities, and enhanced policy-based initiatives to promote local recycled content in consumer goods. *Ongoing*

MUNICIPALITIES WILL:

2.3.3 Facilitate the siting of private sector recycling activities. *2012*

(a) Review zoning bylaws to remove unnecessary impediments to and encourage recycling and material recovery activities in appropriately zoned areas. *2012*

2.3.4 Work with Metro Vancouver on the evaluation of regional scale recycling facilities and development of recycling markets. *Ongoing*

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

2.3.5 Provincial and Federal Governments to identify and establish minimum post-consumer recycled content requirements for consumer goods. *2012*

STRATEGY 2.4

Target demolition, land clearing and construction (DLC) sector for increased reuse and recycling

Although the DLC sector has very high recycling rates due to high levels of concrete and asphalt recycling, there are significant opportunities to improve with respect to a variety of other materials such as wood and roofing.

METRO VANCOUVER WILL:

35) Deletion: Actions transferred to new Strategy 2.7

~~2.4.1 Encourage reuse of wood. 2010~~

~~(a) Examine and, where feasible, implement incentives for reuse and remove barriers to re-use of wood waste. 2010~~

~~(b) Develop and implement information and education programs on the reuse and effective recycling of DLC waste. 2010~~

36) Amended order: Actions reordered to reflect priority; recommendation of Reference Panel

2.4.1 In collaboration with municipalities and industry groups, develop a process to require DLC recycling at construction/demolition sites. 2011

2.4.2 Implement waste diversion strategies directed toward diverting DLC waste from disposal while supporting opportunities for beneficial use. *Ongoing*

(a) Encourage the role of building supply retailers and producers in the collection of DLC material for recycling. *Ongoing*

(b) Provide areas for separated recyclable DLC materials at Eco-Centres and at transfer stations as they are upgraded. *Ongoing*

2.4.3 Review existing DLC recycling and processing capacity, project future needs and develop a strategy to address any identified gaps. *2012*

MUNICIPALITIES WILL:

2.4.4. Work with Metro Vancouver to develop a process to require DLC recycling at construction/demolition sites. *Ongoing*

(a) Review municipal DLC permitting processes with a view to requiring waste management plans as a condition of such permits. *Ongoing*

(b) Review the desirability and feasibility of deposit systems or other financial incentives to increase enforcement of DLC waste management plans. *Ongoing*

37) Deletion: Action transferred to new Strategy 2.7

~~**ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:**~~

~~2.4.6 Provincial Government to expand the inclusion of the reuse of wood in building codes. *Ongoing*~~

STRATEGY 2.5

Reduce paper and paperboard being disposed

19% of the disposed waste stream is made up of paper and paperboard, much of which should be included in the existing recycling programs. Food contaminated paper which cannot be recycled can be composted along with other organics to produce a reusable and beneficial product.

METRO VANCOUVER WILL:

38) New language: business and non-profit organizations added; recommendation of Reference Panel

2.5.1 In collaboration with municipalities, businesses and non-profit organizations, conduct pilot programs to determine the most effective method of reducing unwanted junk mail and other publications and act accordingly on the results. *Ongoing*

2.5.2 Promote reduced paper use and increase paper recycling opportunities in the community and businesses. *Ongoing*

(a) Carry out a community social marketing campaign to determine and overcome barriers to reducing the use of and increasing the recycling of paper in schools and community facilities.

Ongoing

(b) Carry out a targeted outreach campaign to business to determine and overcome barriers to reducing the use of and increasing the recycling of paper. *Ongoing*

MUNICIPALITIES WILL:

2.5.3 Collaborate with Metro Vancouver in junk mail reduction pilot programs and community social marketing programs in community facilities. *Ongoing*

STRATEGY 2.6

Target organics for recycling and energy recovery

Food waste comprises 21% of the waste disposed. This, along with yard and garden waste and some paper and paperboard can be composted together in a source separated stream to produce a beneficial and marketable product which includes compost and bio-fuel.

METRO VANCOUVER WILL:

2.6.1 Evaluate options for processing of organics with biosolids and other utility residuals. *2011*

2.6.2 Divert organics from the waste stream. *2015*

(a) Establish additional organics processing facilities. *2011 and ongoing*

39) New Language: Adds monitoring for organics processing facilities; suggestion of the Health Authorities and Reference Panel

i) establish a system for monitoring emissions from organics processing facilities including bioaerosols. 2011 and ongoing

(b) Determine which paper and paperboard products are suitable for processing at an organics management facility. *2011*

(c) In collaboration with municipalities, develop and implement a work plan for the diversion of organic waste, including food waste, from:

40) Amended Language: Adds specific schedule for implementation as outlined in staff report

i) single family residences 2012

ii) multi-family residences 2015

iii) the ICI sector 2015

~~*i) single family residences Ongoing*~~

~~*ii) multi-family residences Ongoing*~~

~~*iii) the ICI sector Ongoing*~~

(d) Develop and implement supporting communication programs for 2.6.2 (c). *Ongoing*

41) New Language: Adds ban on organics; based on City of Vancouver submission and public input.

(e) Ban all compostable organics allowed in residential green bins from disposal to landfills and all forms of waste-to-energy, except anaerobic digestion. 2015

MUNICIPALITIES WILL:

2.6.3. In collaboration with Metro Vancouver, develop and implement a work plan, including appropriate communication programs for the diversion of organic waste from:

- i) single family residences *2012*
- ii) multi-family residences *2015*
- iii) the ICI sector *2015*

(a) Municipalities will divert organics from the waste stream to a Metro Vancouver or alternative licensed organics processing facility. *2015*

(b) Municipalities will report the tonnage of diverted organic waste to Metro Vancouver in the event that organics are delivered to licensed non-regional processing facilities. *Annually*

<i>42) New Language: Expanded initiatives for wood diversion; based on input from the City of Vancouver and public input.</i>

STRATEGY 2.7

Target wood for reuse, recycle, and energy recovery

Encouraging the reuse, recycling and energy recovery from wood should follow the waste management hierarchy to ensure highest and best use of wood.

METRO VANCOUVER WILL:

2.7.1 Encourage reuse of wood. 2010

(a) Examine and, where feasible, implement incentives for reuse and remove barriers to re-use of wood waste. 2010

(b) Develop and implement information and education programs on the reuse and effective recycling of wood and other DLC waste. 2010

2.7.2 Collect wood for reuse, recycling, and energy recovery at regional transfer stations and eco-centres. Ongoing

2.7.3 Encourage highest and best use for wood following the waste management hierarchy in the following priority: Ongoing

- (a) reuse wood for comparable structural and non-structural applications.
- (b) recycle wood fibre into other fibre based products.
- (c) compost wood with other organic materials
- (d) digest wood to produce biofuels
- (e) process wood as a fuel for energy production.

2.7.4 Pass by-laws as required to support highest and best use of wood as outlined in 2.7.3 Ongoing (as required)

2.7.5 Ban all wood from disposal. 2015

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

2.7.6 Provincial Government to expand the inclusion of the reuse of wood in building codes.
Ongoing

STRATEGY 2.8

Target plastics for increased recycling

Many plastics can be used to create new products. Recycling plastics reduces the amount of waste that must be transported, treated, and landfilled and conserves a non-renewable resource.

METRO VANCOUVER WILL:

2.8.1 Expand the recycling of plastics in the residential and commercial sectors. *2011*

(a) Establish a standard for municipal programs for collection of plastics based on market strength. *2011*

(b) In cooperation with retail partners and municipalities, undertake social marketing pilot programs to reduce the use of disposable take-out food and beverage packaging including plastic and other disposable bags. *2011*

MUNICIPALITIES WILL:

2.8.2 Work with Metro Vancouver on programs to reduce the use of disposable take-out food and beverage packaging including plastic and other disposable bags. *2011*

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

2.8.3 The Provincial Government to develop EPR programs for all plastics that provide incentives for alternatives to non-recyclable plastics. *Ongoing*

2.8.4 The Provincial and Federal Governments to require all plastic material sold in BC to have a material code identifying its composition. *Ongoing*

STRATEGY 2.9

Target multi-family and industrial, commercial and institutional (ICI) sectors to improve diversion rates

Multi-family residences and the commercial sector have relatively low diversion rates, in part because many premises do not have adequate facilities to accommodate recycling.

METRO VANCOUVER WILL:

2.9.1 Develop bylaws to require recycling in all multi-family and commercial buildings and

Complexes. 2011

(a) Develop a model bylaw and enforcement model to require recycling in multi-family and commercial buildings. 2011

(b) Create an advisory service for recycling programs for multi-family and commercial buildings. 2011

MUNICIPALITIES WILL:

2.9.2 Work with Metro Vancouver to implement recycling in multi-family and commercial Buildings. 2011

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

43) *New Language: To facilitate recycling in multi-family and commercial buildings; public input*

2.9.3 The Provincial Government modify the BC Building Code to require that space be provided for recycling collection, sorting and pick-up in multi-family residential and commercial buildings

44) *New Language: Addressing the economic uncertainty of recyclable commodities; municipal and public input.*

STRATEGY 2.10

Develop contingency plans for the loss of recycling markets

Changes in the local and global economies occasionally affect the demand for recovered and recycled materials.

METRO VANCOUVER WILL:

2.10.1 Manage diverted materials in accordance with the requirements of the Environmental Management Act and regulations in that materials will not be disposed unless all feasible opportunities for higher uses of the materials have been taken. 2011

MUNICIPALITIES WILL:

2.10.2 Manage diverted materials in accordance with the requirements of the Environmental Management Act and regulations in that materials will not be disposed unless all feasible opportunities for higher uses of the materials have been taken. 2011

45) *New Language: Establishment of a new advisory body; Board direction and consistent with LWMP*

STRATEGY 2.11

Integrated Utility Management Advisory Committee

An interagency committee would advise Metro Vancouver on the integration of utility systems.

METRO VANCOUVER WILL:

2.11.1 Establish a new overarching committee, the Integrated Utility Management Advisory Committee (IUMAC), to advise Metro Vancouver on plan implementation, particularly from the perspectives of integrated planning and resource recovery across utility systems. 2011

Goal 3: Recover Energy from the Waste Stream After Material Recycling

The following strategies will increase processing of the waste remaining after recycling in order to provide the highest beneficial use to society.

STRATEGY 3.1

Use Waste-to-energy to provide electricity and district heating

Waste-to-Energy facilities most effectively and efficiently extract energy from the waste stream remaining after recycling and when combined with district heating can reduce the environmental impacts of energy use within the region. The planned capacity of such facilities should be compatible with waste diversion targets and initiatives and projected waste flows which remain after such diversion.

46) *New Language: To establish standards to ensure the beneficial use of both power and heat; response to suggestions by the Ministry of Environment*

All waste-to-energy facilities must meet or exceed the minimum energy efficiency required to be classified under the 4th R - Recovery as outlined in European Union standard (PE-CONS 3646/08) and accepted by the Province of BC.

METRO VANCOUVER WILL:

3.1.1 Continue use of existing waste-to-energy facility in Burnaby.

47) *New Language: Allows for progressive shut down of Burnaby facility as waste flows decline; response to public input concerning not undermining waste diversion targets and the submission of the Health Authorities.*

(a) Subject to the limitations established in the section titled "Flow Control", use the facility at its current usage and capacity of 280,000 tonnes per year to recover available energy in the waste remaining after recycling for district energy and electricity generation. *Ongoing*

48) *New Language: To confirm commitment to the highest emissions and monitoring standards; in response to suggestion from the Ministry of Environment*

(b) Continue to meet the monitoring and emission requirements in Appendix A. *Ongoing*

(c) Continue to improve environmental performance of the facility with improved technologies and monitor performance to ensure compliance with applicable legislation and regulations. *Ongoing*

49) *New Language: Greater transparency; requested by the Ministry of Environment*

(d) Operating performance will continue to be reported on a regular and timely basis and will also be available on the Metro Vancouver web site. *Ongoing*

50) *New Language: Strengthens the commitment to achieving the highest environmental performance standards; responding to comments from the Ministry of Environment and the public.*

(e) The waste-to-energy facility in Burnaby will comply with applicable legislation and operating contracts may include penalties for any violations of performance criteria.

3.1.2 Expand the use of waste-to-energy within the region. 2015

51) *New Language: To clarify meaning of waste-to-energy and commitment to transparent evaluation, including public health, of all options; response to submission from Health Authorities.*

Waste-to-energy means any process that converts waste material to energy and heat, including the production of fuel which is subsequently combusted for these purposes. All options will be considered and evaluated fairly and transparently including a public health cost/benefit lens.

For the purpose of assessment, waste-to-energy may include, but not necessarily be limited to:

- ~~targeted incineration~~
- ~~industrial use of refuse derived fuel~~
- ~~gasification/pyrolysis~~
- ~~anaerobic digestion~~
- ~~a combination of technologies~~

(a) Establish up to 500,000 tonnes per year of new waste-to-energy capacity within the region in one or more facilities.

(b) Ensure implementation of new waste-to-energy capacity maximizes energy recovery for use in district heating, production of alternative fuels, industrial applications and electricity generation.

(c) Monitor trends in waste reduction, recycling and waste flows and implement additional waste-to-energy capacity if, and only if, justified on the basis of these trends.

(d) Scale any additional waste-to-energy capacity so that total waste-to-energy capacity in the region does not exceed the most probable minimum waste flow projected over the economic life of those facilities.

52) *New Language: Strengthens the commitment to achieving the highest environmental performance standards; responding to comments from the Ministry of Environment and the public.*

(e) Operating performance will be reported on a regular and timely basis and will also be available on the Metro Vancouver web site. Any new waste-to-energy facility will comply with applicable legislation and operating contracts may include penalties for any violations of performance criteria.

~~(e) Monitor the waste-to-energy facility(ies) to ensure compliance.~~

3.1.3 Locate new waste-to-energy capacity within the Region on the basis of:

site availability; suitability of site for providing district heating from recovered energy; potential for site to optimize network of transfer stations; results of local screening level impact assessment and triple bottom line analysis; and results of community consultation process for each potential site.

3.1.4 Ensure that new waste-to-energy facilities within the region are designed to maximize the environmental, financial and social benefits of facilities.

(a) Evaluate cost/benefits of proposed new facilities over their lifetime, including construction, commissioning, operation and maintenance, future retrofits and decommissioning impacts, and ownership structure.

53) Amended Language: Includes a commitment to human health risk assessment; response to submission by Health Authorities.

(b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements, including an assessment of human health risk acceptable to the applicable health authority.

~~*(b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements.*~~

(c) Evaluation criteria will include:

cost; use of best available commercial technology; air emission and health impacts; GHG emissions; alignment with sustainability principles; electricity, district heating and alternative fuel production; beneficial use of ash; metals recovery; potential local job creation; and opportunities for research and education.

3.1.5 If expanded use of waste-to-energy within the region is not possible then establish waste-to-energy capacity outside the region.

(a) Establish up to 500,000 tonnes per year of new waste-to-energy capacity outside the Region.

(b) Ensure implementation of new waste-to-energy capacity maximizes energy recovery for use in district heating, production of alternative fuels, industrial applications and electricity generation.

(c) Monitor trends in waste reduction, recycling and waste flows and implement additional waste-to-energy capacity if, and only if, justified on the basis of these trends.

(d) Scale any additional waste-to-energy capacity so that total waste-to-energy capacity does not exceed the most probable minimum waste flow projected over the economic life of those facilities.

(e) Monitor the waste-to-energy facility(ies) to ensure compliance.

3.1.6 Locate new waste-to-energy capacity outside the Region on the basis of:

site availability; suitability of site for maximum energy recovery; results of local screening level impact assessment and triple bottom line analysis; and the results of community consultation for each potential site.

3.1.7 Ensure that new waste-to-energy facilities outside the region are designed to maximize the environmental, financial and social benefits of facilities.

(a) Evaluate cost/benefits of proposed new facilities over their lifetime, including construction, commissioning, operation and maintenance, future retrofits and decommissioning impacts.

54) *Amended Language: Includes a commitment to human health risk assessment; response to submission by Health Authorities.*

(b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements, including an assessment of human health risk acceptable to the applicable health authority.

~~(b) Conduct an environmental impact assessment of the waste-to-energy facility(ies), based on applicable provincial and federal government requirements.~~

(c) Evaluation criteria will include:

use of best available commercial technology; emissions outperform applicable environmental standards; alignment with sustainability principles; electricity, district heating and alternative fuel production; beneficial use of ash; metals recovery; potential local job creation; and opportunities for research and education.

3.1.8 Recover metals, ash or other residues from new and existing waste-to-energy facilities for beneficial use *Ongoing*.

(a) Work with regulatory agencies to identify and remove barriers to beneficial use of ash.

(b) Maximize metal recovery from the waste stream after recycling..

(c) Process bottom and fly ash to generate products for beneficial use.

(d) Use processed bottom and fly ash beneficially for highest value applications available.

(e) If beneficial use of a residue is not reasonably available, dispose of the residue in accordance with applicable legislation.

3.1.9 Recover energy from regional utility materials that cannot be recycled, including liquid waste and water utilities. *Ongoing*

(a) Recover energy from drinking water treatment processes, such organic filter media that cannot be recycled.

(b) Use waste-to-energy to process grit and screenings from wastewater treatment for beneficial uses, where appropriate.

(c) Use reclaimed water from wastewater treatment plants in waste-to-energy steam generation or district heating, if viable.

STRATEGY 3.2

Recover energy from other solid waste management facilities

Valuable methane in landfill gas will be captured and used to generate clean electricity or heat.

MUNICIPALITIES (CITY OF VANCOUVER) WILL:

3.2.1 Recover landfill gas from Vancouver Landfill and strive to maximize the beneficial use of the recovered gas. *Ongoing*

STRATEGY 3.3

Utilize non-recyclable material as fuel

Some materials cannot be recycled. However, such materials can provide a valuable source of fuel, replacing virgin fossil fuels.

METRO VANCOUVER WILL:

3.3.1 Direct recoverable loads of combustible material received at transfer stations to public or private energy recovery facilities. *2012*

<i>55) Deletion: Action moved to Strategy 2.7</i>

~~3.3.2 Ban wood from landfill disposal. 2012~~

MUNICIPALITIES (CITY OF VANCOUVER) WILL:

3.3.2 Collaborate with Metro Vancouver in ensuring action 3.3.1 is carried out at solid waste management facilities operated by the City of Vancouver. *2012*

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES:

3.3.3 Provincial Government to develop material and energy requirements for existing and future stewardship programs to use the non-recyclable portion of returned material as fuel rather than landfilling. *2012*

Goal 4: Dispose of All Remaining Waste in Landfill, after Material Recycling and Energy Recovery

STRATEGY 4.1

Utilize the Vancouver Landfill as a disposal site

Waste will remain after recycling and energy recovery. Additionally, as a result of ensuring that waste-to-energy facilities are sized to be compatible with waste reduction and diversion objectives, there will be residual (post recycling) waste flows which exceed the aggregate capacity of the region's waste-to-energy facilities. Such waste must be disposed of in an environmentally sound and economically efficient manner. The Vancouver Landfill provides a local solution for remaining waste.

METRO VANCOUVER WILL:

56) *Deletion: Change recognizes requirement of the Environmental Management Act that the Plan has precedence over other instruments.*

4.1.1 Use the Vancouver Landfill to dispose of any remaining waste not directed to waste-to-energy facilities. *Ongoing*

~~4.1.1 Use the Vancouver Landfill to dispose of any remaining waste not directed to waste-to-energy facilities, subject to any fixed limits identified in the Operational Certificate of the landfill, related contracts, agreements between Vancouver, Delta, and Metro Vancouver and regulations.~~

57) *New language: future flow reductions to the Vancouver Landfill; input from Corporation of Delta.*

(a) Metro Vancouver will work with the City of Vancouver and Corporation of Delta to reduce the quantity of waste going to the Vancouver Landfill to a maximum of 100,000 tonnes annually, exclusive of waste-to-energy residuals, by 2020. Should these reductions not be achieved because overall waste flows exceed the combined capacity of disposal options, Metro Vancouver will evaluate cost effective alternatives and if appropriate seek an amendment to this plan to expand waste-to-energy capacity to further reduce waste flows to the Vancouver Landfill.

(b) Monitor the Vancouver Landfill to ensure compliance.

4.1.2 Report annually on the remaining capacity of the waste management system and prior to the closure of Vancouver Landfill, reassess the region's waste-to-energy and disposal options.

Ongoing

MUNICIPALITIES (CITY OF VANCOUVER AND THE CORPORATION OF DELTA) WILL:

58) *Deletion: Change recognizes requirement of the Environmental Management Act that the Plan has precedence over other instruments.*

4.1.3 Work with Metro Vancouver to accommodate residual waste flows at the Vancouver Landfill.

~~4.1.3. Work with Metro Vancouver to accommodate residual waste flows at the Vancouver Landfill subject to any fixed limits identified in the Operational Certificate of the landfill, related contracts, agreements and regulations. Ongoing~~

4.1.4 Where limits in the Operational Certificate, contracts, agreements and regulations appear to conflict with the Plan, review the particular provisions in good faith with the Province, Metro Vancouver and any other involved party to determine if there is a solution acceptable to all affected parties. *Ongoing*

STRATEGY 4.2

Ensure a disposal site is available for DLC waste

Notwithstanding efforts to increase recycling, local public and private disposal sites for DLC waste are expected to reach their capacity in the near future. Collaboration with local and out-of-region stakeholders is necessary to anticipate DLC waste flows and identify future disposal sites.

METRO VANCOUVER WILL:

4.2.1 Assess long-term disposal of demolition, landclearing, and construction (DLC) waste remaining after recycling in collaboration with the private sector, neighbouring regional districts and First Nations communities. *Ongoing*

4.2.2 Identify disposal sites for DLC waste remaining after recycling that will be available when existing disposal facilities reach their capacity. *Ongoing*

STRATEGY 4.3

Establish contingency disposal sites

During the implementation of, or following the implementation of Goal 3, if waste-to-energy capacity and/or local landfill capacity do not provide adequate disposal capacity, Metro Vancouver will need to use out-of-region landfill(s) for disposing of non-recyclable waste.

METRO VANCOUVER WILL:

4.3.1 Ensure adequate landfill capacity for:

(a) non-combustible and non-recyclable material; and

(b) municipal solid waste in excess of waste-to-energy and in-region landfill capacity (including allowances for variability in waste flows and short term operational disruption), and non-recyclable ash. *Ongoing* as required

4.3.2. If sufficient waste-to-energy or in-region landfill capacity is not available, this plan explicitly permits Metro Vancouver to seek through an appropriate procurement process the best available out-of-region landfill(s) for the disposal of remaining waste, subject to that facility having appropriate permits, from the local permitting jurisdiction in which it is located, to accept such waste. *Ongoing* as required

(a) Categories of evaluation for a contingency landfill will include, but not necessarily be limited to cost, air emissions, GHG emissions, energy benefit and, where appropriate, completion of a satisfactory human health impact assessment.

(b) Monitor contingency disposal site(s) for performance and compliance. *Ongoing*

Performance Measures and Adaptive Management

Performance Measures

Metro Vancouver will develop a waste accounting system for the entire solid waste management system, identifying the quantities generated, recycled, composted, used for energy recovery, and disposed in landfill. Comparison of per capita disposal values will provide the most accurate assessment of progress of the plan.

The following performance measures will monitor progress in achieving the specific goals. Performance should be considered in the context of 2008 waste management data. Performance Measures for each goal are:

Goal 1: Minimize Waste Generation

- Waste generation per capita tracked year-over-year and on a rolling five year basis.

59) *Amended Wording: Introduced tracking by sector; in response to municipal input*

- Waste generation quantities for all sectors tracked year-over-year and on a rolling five year basis.
- ~~Waste generation per capita for residential and commercial waste tracked year-over-year and on a rolling five year basis~~
- Increase of product stewardship initiatives by senior governments to more than two initiatives every three years.
- Monitor performance of EPR programs to ensure shift in responsibility from public to private sector achieves a reduction in total waste generated.

Goal 2: Maximize Reuse, Recycling and Material Recovery

- Overall diversion rate tracked year-over-year
- Diversion rate per-capita tracked year-over-year

60) *New language: waste disposal per-capita added; recommendation of Reference Panel*

- Waste disposed per-capita tracked year-over-year
- Tracking of material recycling tonnage
- Monitor performance of EPR programs to ensure shift in responsibility from public to private sector achieves an increase in materials reused, recycled, and recovered

Goal 3: Recover Energy from the Waste Stream After Material Recycling

- Energy outputs from solid waste and its beneficial use tracked year-over-year
- Energy outputs recovered from materials that cannot be recycled through recycling efforts and stewardship programs
- Greenhouse gas production tracked year-over-year

Goal 4: Dispose of all Remaining Waste in Landfill, after Material Recycling and energy Recovery

- Quantity of treated and untreated waste per capita going to landfill is tracked year-over-year

In addition, Metro Vancouver will carry out periodic waste composition audits.

61) Section relocated: Adaptive Management section relocated from Goal 4 as it applies to all goals; recommendation of Reference Panel

Adaptive Management

A key feature of the plan is adaptive management – monitoring progress, identifying challenges, and finding solutions to overcome challenges. Through monitoring, assessment, and collaboration, Metro Vancouver and its members will continue to adapt and evolve their solid waste management operations and infrastructure and create more resilient and adaptable systems. Adaptive management will include the following initiatives:

- In the event of circumstances such as an operational disruption or closure at a facility identified in the Plan, the region will be prepared to send surplus waste to an out-of– region landfill until sufficient processing or disposal capacity becomes available in the region Permitted landfill(s) will be selected based on:
 - (a) ability to provide service on a short term or interim basis
 - (b) sustainability principles
- Continue to assess the success of initiatives outlined in the Plan against the overall trends in waste generation and the performance of waste-to-energy facilities to determine the need for an emphasis of future resource allocations to the various strategies and actions.
- Continue to receive advice from the Waste Management Committee.
- In collaboration with municipalities, biennially produce a progress report on plan implementation for distribution to the Ministry of Environment that:
 - (a) summarizes progress from the previous two years on regional and municipal plan implementation, the status of performance measures, and relevant education and outreach programs.
 - (b) includes summaries and budget estimates for proposed Metro Vancouver and municipal ISWRMP implementation programs for the subsequent two calendar years.

- Will obtain public feedback on the report by making the report available through Metro Vancouver's website and by holding a special meeting of the Metro Vancouver Waste Management Committee to receive public comments and input on the report.
- In collaboration with members and the Ministry of Environment, produce an ISWRMP progress report every two years, a comprehensive performance review every five years, and a full plan review and update every ten years.
- Municipalities will work with Metro Vancouver to give effect to the adaptive management initiatives.

Financial Implications

Roles and Responsibilities

Solid waste management services are provided for the region collaboratively by Metro Vancouver, member municipalities, and the private sector. While the roles of each party may overlap, primary roles for recycling include: Metro Vancouver establishes policy for waste diversion initiatives, member municipalities implement recycling programs including collection within their municipalities, and the private sector provides collection services, manages material brokerage and physical recycling of materials including provision of infrastructure for recycling facilities.

Responsibilities for disposal of the remaining solid waste includes: Metro Vancouver establishes policy for waste disposal, and manages infrastructure and operations of transfer and disposal facilities; member municipalities manage solid waste collection services; and the private sector may provide services for collection, and operation of transfer and disposal facilities. The main exception to these roles is the ownership and operation of the Vancouver Transfer Station and Landfill by the City of Vancouver.

Cost of Solid Waste Management

Funding for material recycling is provided by residents and businesses through one of two Mechanisms. Materials with no associated industry stewardship program, such as paper, are funded from businesses and residents to recycling collectors (municipalities, or private sector contractors) either through municipal taxes or through direct contracts with collectors. Materials covered by Extended Producer Responsibility programs, such as beverage containers, are typically funded through deposits paid by consumers to the industry association which then carries responsibility for collection and recycling of the materials.

As outlined in Table 1, within Metro Vancouver, net expenditures associated with recycling activities is currently estimated to be \$190 million annually. This reflects the cost paid to contractors for collection, transportation, and processing of recyclable materials. Following implementation of actions within this Plan, regional recycling net expenditures are projected to increase by 42% to \$270 million annually – an increase of \$80 million each year. The increase in economic activity will result in a corresponding increase in the diversion rate from 55% to 70% - a 27% increase. The cost increase of 42% producing a 27% increase in recycling reflects diminishing returns with respect to recycling materials with lower value, or more expensive processes and infrastructure. This trend of diminishing returns is anticipated to continue as the 70% diversion target is approached since the remaining materials become more challenging and costly to recycle.

TABLE 1 REGIONAL WASTE MANAGEMENT – NET EXPENDITURES

	35 Year Net Cost (\$ billion)	Annual Net Cost (\$ million)	Per Capita Cost (\$)
Total Current SWMP	\$20	\$550	\$247
Total Proposed ISWRMP	\$18	\$490	\$220
Difference	(\$2)	(\$60)	(\$27)
Current Recycling (55%)	\$7	\$190	\$85
Proposed Recycling (70%)	\$10	\$270	\$121
Difference	\$3	\$80	\$36
Current Disposal	\$13	\$360	\$162
Proposed Disposal	\$8	\$220	\$99
Difference	(\$5)	(\$140)	(\$63)

Funding for management of the materials remaining after recycling is provided by residents and businesses to solid waste collectors (municipalities or private sector contractors) either through municipal taxes or through direct contracts with the private sector collectors.

Within Metro Vancouver, net expenditures associated with solid waste disposal are currently estimated to be \$360 million annually. This reflects the cost for collection, transportation, and disposal of solid waste remaining after recycling. Following implementation of actions within this Plan, regional solid waste disposal net expenditures are projected to decrease by 39% to \$220 million annually – a decrease of \$140 million each year. This decrease is due to the reduction in waste quantities, and increased revenues from energy recovery through actions outlined in Goal 3 of the Plan.

The system costs for both recycling and disposal are also expressed in Table 1 on a per-capita basis. The per-capita cost for recycling will be higher than disposal, reflecting the greater quantities of recyclable materials. However, pricing will be established to ensure a financial incentive to encourage recycling and waste diversion.

The costs identified in Table 1 reflect expenditures based upon the actions identified in the Plan which includes additional waste-to-energy capacity provided within the region. Alternately, if waste-to-energy capacity is provided out-of-region, net costs are anticipated to increase by \$1.5 billion dollars over 35 years, or, \$43 million annually. Similarly, if out-of-region landfill capacity is pursued, net costs are anticipated to increase by \$1.5 billion over the same time frame, or \$43 million annually compared to the proposed plan. It is expected that the cost to export waste to the U.S. would be similar to those presented for out-of-region landfill.

While Table 1 identifies the net regional expenditures on waste management, it does not account for the regional economy associated with recycling and disposal. There is considerable economic activity that takes place in the process of recycling the collected materials into new goods as an alternative to virgin feedstocks. Although difficult to estimate, the economy associated with remanufacturing recycled materials into new products exceeds the costs for collection, transportation and processing. Net expenditures associated with disposal more closely reflect the entire disposal economy since there is little economic activity that occurs following disposal. While this Plan places much greater emphasis on waste reduction and recycling, and shifts regional net expenditures in alignment with this emphasis, there is an even greater shift in the overall regional

economy from disposal to waste reduction and recycling. As a result, the regional economy for waste reduction and recycling far exceeds that for waste disposal and therefore is reflective of the priority placed upon waste reduction, reuse and recycling as outlined in this plan.

Pricing Strategies

The costs of operating the integrated solid waste and resource recovery system, including initiatives to encourage waste reduction, reuse and recycling, will be funded from revenues from users of the system (principally the tipping fee) and from revenues from recovered resources (recycled materials and recovered energy).

Residents and businesses will have an economic incentive to invest in waste diversion initiatives, arising primarily from the difference between the cost of recycling and the tipping fee for waste disposal at public facilities. The regional tipping fee will continue to be set at a rate to recover Metro Vancouver's cost to manage the solid waste system. The tipping fee for many recyclable materials will be reduced or waived at regional facilities to encourage participation. By utilizing this economic incentive of reducing or waiving the tipping fee for recyclable materials, positive behaviour will be encouraged thereby driving an increase in the material diverted from the disposal stream and helping to achieve the 70 percent diversion target. Pricing will be established so that the most expensive choice for residents and businesses will be to place materials in garbage cans and dumpsters for disposal.

Ownership and Financing

There are options to be considered for facility ownership and the related business model for all new facilities contemplated in this Plan. Currently, the existing waste-to-energy facility in Burnaby is owned by Metro Vancouver and operated by a contractor under a long-term operating agreement. The benefits of facility ownership include the accrual to Metro Vancouver of debt reduction once debt has been fully serviced, full control of all upgrades associated with the facility, no need for put-or-pay contracts, the ability to fully maximize revenues to offset costs, the control of all indirect costs including royalty payments, the control and negotiation of all operating certificates and the ability to further minimize cost by not requiring a profit margin. The consideration of the benefits of ownership was paramount when the decision was made in 2000 by the Board to purchase the Ashcroft Ranch and pursue the development of a Metro Vancouver owned landfill. In selecting the ownership and business model for new facilities Metro Vancouver will choose the option that results in the best available financial position for the residents and businesses of the region.

Where capital needs to be raised and debt financed, the least expensive alternative is Metro Vancouver ownership with financing provided through the Municipal Finance Authority. In addition to this financing structure, Metro Vancouver will explore other structures including Public Private Partnerships (3P) on a facility specific basis, where capital financing may be provided by the private sector partner.

As the outcomes of this plan contribute to the achievement of provincial and federal environmental and energy goals, and as regional and municipal financial resources are limited, and as public investment in the actions set out in this plan will assist in achieving the goals of this plan and are in the public interest, financial support from provincial and federal sources will be sought to implement waste diversion programs and develop facilities identified in the Plan.

Financial Details

Direct expenditures by Metro Vancouver and member municipalities for Goals 1 and 2 of the draft Plan are estimated to cost \$170 million in one-time capital costs, and \$40 million in annual operating costs. Significant initiatives provided through these expenditures (action number provided for reference) include: establish and progressively expand a network of eco-centres (2.2.4.); divert organics from the waste stream through separated collection from residential and industrial, commercial and institutional sectors, and establishing one or more organics processing facilities (2.6.2., 2.6.3.); provide information and education including social marketing programs (1.2.1., 1.3.1., 1.3.2., 1.3.3., 2.2.2., 2.2.5., 2.2.6., 2.2.7., 2.5.2., 2.5.3., 2.6.2., 2.6.3., 2.7.1.); regionally mandate DLC recycling at jobsites (2.4.4.); and regionally mandate recycling in all multifamily and commercial buildings (2.9.1., 2.9.2.).

Expenditures for actions identified in Goals 1 and 2 will be funded through tipping fees received for waste disposal and from revenues associated with actions. For example, expenditures for eco-centres will be partially offset by compensation from industry stewards for EPR material collection at the eco-centres and from private sector partners operating at eco-centres. Revenue from compost or energy sales at organics processing facilities will offset the costs associated with operating these proposed facilities.

Direct expenditures by Metro Vancouver and member municipalities for Goals 3 and 4 of the draft Plan are dependent upon the financing and ownership structure for new facilities. If new disposal facilities are provided by and owned by Metro Vancouver, costs for Goals 3 and 4 are estimated to be \$440 million in one-time capital costs. Annual operating costs are projected to be approximately \$15 million lower than current costs under this financing and ownership structure, tipping fees for waste disposal will increase initially during the 15 year amortization period. Following debt retirement, net expenditures will decrease considerably reflecting the revenue from new waste-to-energy capacity and no debt repayment costs. Over a 30 year operating period, total revenues for new waste-to-energy facilities are projected to exceed the total expenditures resulting in a net revenue. Profit will continue to increase each subsequent year as revenues are accrued in the absence of any capital repayment costs. This is favourable over a 30 year operating period when compared to a \$3.1 billion expenditure for an option emphasizing mechanical biological-treatment processing or a \$1.5 billion expenditure for an option emphasizing landfilling.

Provision of waste-to-energy capacity is estimated on the basis of a single new facility providing 500,000 tonnes capacity annually. Distributed systems of waste-to-energy using several smaller facilities will provide social and environmental benefits in the form of additional facilities and the corresponding increased convenience to customers, and reduced emissions and congestion from transportation of waste from regional transfer stations. Financially, a distributed system would reduce the need for transfer stations and associated costs, but would also reduce economies of scale provided by a larger capacity facility and result in higher costs.

If new waste-to-energy facilities are owned and financed by the private sector, costs for Goals 3 and 4 may be recovered over a longer time frame and the regional tipping fees could increase gradually over time due to inflated contract costs. Over a 30 year operating period, privately owned facilities could cost hundreds of millions of dollars more than public ownership if increasing energy revenues accrue to the private sector owner. Accordingly, Metro Vancouver will pursue the ownership and financing model that is in the best interest of member municipalities, residents, and businesses within the region.

APPENDIX A

LONG TERM MONITORING REQUIREMENTS FOR THE WASTE-TO-ENERGY FACILITY IN BURNABY

This Appendix outlines the long term monitoring requirement for Metro Vancouver's Waste-to-Energy Facility in Burnaby as originally outlined in Metro Vancouver's (formerly Greater Vancouver Regional District) 1995 Solid Waste Management Plan (SWMP).

1.0 Air Discharge Limits and Monitoring Methods

Where applicable, all contaminant concentrations are stated at standard conditions of 293 K, 101.3 kilopascals (1 atmosphere), corrected to 11 % oxygen and dry basis unless otherwise noted. Discharge specifications apply to each incinerator unit separately. A continuous time-shared analyzing system is used for monitoring emissions from all three incineration units.

1.1 Opacity

Opacity shall not exceed 5% based on 1-hour averaging of continuous monitoring.

1.2 Particulate Matter

Particulate matter from each incinerator stack shall not exceed 20 mg/m³ based on manual stack testing methods approved by the Regional Waste Manager.

1.3 Carbon Monoxide (CO)

Carbon monoxide emissions shall not exceed 55 mg/m³ for steady state incinerator operation based on a 4-hour rolling average of continuous monitoring.

1.4 Sulphur Dioxide (SO₂)

Sulphur dioxide emissions shall not exceed 200 mg/m³ based on a 24-hour average of continuous monitoring. This shall be verified by manual stack testing.

1.5 Nitrogen Oxides (NO_x)

The GVRD will implement a NO_x reduction strategy by July 1996 as required by the BC Ministry of Environment to meet or exceed the BC MSW Criteria limit of 350 mg/m³, expressed as NO₂ on a 24-hour average of continuous monitoring.

1.6 Hydrogen Chloride (HCl)

Hydrogen chloride emissions shall not exceed 55 mg/m³ (wet basis), based on manual stack testing methods approved by the Regional Waste Manager. Continuous monitoring of SO₂ shall be used as a surrogate for emission monitoring of acid gases, such as HCl and HF. Continuous monitoring of HCl (using a 24 hour average) shall be conducted for reporting purposes until the end of the useful life of the HCl analyzer.

1.7 Hydrogen Fluoride (HF)

Hydrogen fluoride emissions shall not exceed 3 mg/m³ based on manual stack testing methods approved by the Regional Waste Manager.

1.8 Total Hydrocarbons (THC)

Total hydrocarbon emissions (measured as methane, CH₄) shall not exceed 40 mg/m³ based on manual stack testing methods approved by the Regional Waste Manager. Continuous monitoring of carbon monoxide emissions shall be used as a surrogate indicator to monitor combustion efficiencies and the discharge of combustibles, such as total hydrocarbons.

1.9 Trace Metals

Trace metal emissions shall not exceed the following limits based on manual stack testing methods approved by the Regional Waste Manager:

METALS	LIMIT
Total of Cadmium, Mercury, and Thallium	200 µg/m ³
Total of Arsenic, Cobalt, Nickel, Selenium, and Tellurium	1000 µg/m ³
Total of Antimony, Lead, Chromium, Copper, Manganese, Vanadium and Zinc	5000 µg/m ³
Mercury	200 µg/m ³
Cadmium	100 µg/m ³
Lead	50 µg/m ³

Continuous monitoring of opacity shall be used as a surrogate indicator for trace metal discharges.

1.10 Trace Organics

Trace organic emissions shall not exceed 0.5 ng/m³ for the sum of PCDD and PCDF as toxicity equivalents, and 5 µg/m³ for polyaromatic hydrocarbons based on manual stack testing methods approved by the Regional Waste Manager. Frequency of manual stack testing shall be as required by the Regional Waste Manager.

1.11 Frequency of Manual Stack Testing

Manual stack testing for trace organics shall be performed as required by the Regional Waste Manager. HF and THC testing shall be conducted annually. SO₂, HCl, particulates and trace metals shall be conducted three times in both 1995 and 1996. If the results of these tests are satisfactory, frequency will be reduced to annual testing.

2.0 Additional Monitoring and Reporting

2.1 Furnace Temperature

Furnace reference temperature for each incinerator unit shall be monitored and reported with a minimum of 800°C based on a 1-hour averaging time during normal operating conditions.

2.2 Emission Control Device Temperature

Emission control device temperature shall not exceed a temperature of 190°C based on a 1-hour averaging time.

2.3 Monitoring of Oxygen

Oxygen shall be continuously monitored and reported as a percentage of stack gas on a 1-hour averaging basis.

2.4 Flowrate and Operating Period

The flue gas flow rate for each incinerator unit shall not exceed 1200 m³/minute for a continuous operating period.

2.5 Availability

The monthly availability of the SO₂ continuous monitor shall be at least 90%. Opacity, oxygen, carbon monoxide, reference furnace temperature, and emission control device outlet temperature shall have a monthly availability of at least 95%.

The Regional Waste Manager shall be notified of any continuous monitor failure for a period which may result in non-attainment of the recommended availability. If immediate corrective action was taken to return the monitor to service, compliance shall be granted providing the District can supply evidence (operating and emission data) indicating that the facility was in normal continuous operation.

2.7 Monthly Reporting

Monthly reports shall include compliance summaries for all parameters with specified limits. Tabulated hourly averaged data and data based on required averaging periods of all continuously monitored parameters, including availability and data capture information, shall be available for inspection but not included in the monthly report. Raw data shall be maintained and available for inspection at the incinerator site for a minimum period of two years.

2.8 Annual Reporting

An annual report shall be provided within 90 days following the end of the calendar year. The report shall consolidate and summarize the monthly data as well as briefly summarize the topics itemized in Section 6.3 of the BC MSW Criteria.

2.9 Start-up, Shutdown and Upset Conditions

During start-up, shutdown, equipment malfunction and operating upsets requiring shutdown (i.e. ash discharge or feed chute plugging), emission data recorded by the CEMS shall be excluded from the regulatory emission averaging calculations. When required, the time, duration, and reason for an occurrence during transient conditions shall be reported to the Ministry. The corrective action taken by the operator in attempting to return the operation to steady-state conditions shall be included in the report.

4200936

Integrated Solid Waste and Resource Management Plan:

Reference Table: Compilation of final revisions with Engineering Department Comments

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
Goals & Targets			
<p>Targets</p> <p><u>Reference Pages 4 & 5 Appendix II</u></p>	<p><u>(1) Newly Added Language:</u></p> <p>Reaching the primary goal of waste avoidance requires a reduction in the generation of waste. Metro Vancouver has few levers to directly control the volume of waste generated. So the target for waste reduction is one to which the community as a whole must aspire, rather than one for which the GVS&DD can be held wholly responsible to achieve. This plan therefore sets a target for the Metro Vancouver region to reduce the quantity of waste generated per capita within the region, calculated on a rolling 5 year average, to 90% or less of 2010 volumes by 2020.</p> <p><u>(2) Amended Language:</u></p> <p>To reach the second goal of waste reuse, recycling and material recovery, as much as possible must be diverted away from the waste disposal stream and into programs aimed at reuse, recycling and material recovery. The second target of the ISWRMP is to increase the regional diversion rate from an average of 55% to a minimum of 70% by 2015 and an aspirational target of achieving 80% by 2020 assuming there will be sustained markets for all diverted material.</p> <p><i>The overall 70% diversion target implies the following approximate diversion rates by sector:</i></p> <ul style="list-style-type: none"> • Multi-family 30% • Single family 65% • Institutional, commercial and industrial 70% • Demolition, land clearing and construction 80% <p><i>The target of the ISWRMP is to increase the regional diversion rate from an average of 55% to 70% by 2015</i></p>	<p>Input from the City of Vancouver, and public consultation: Adds per-capita waste reduction target.</p> <p>Amended language adds “minimum of” to the 70% diversion target, and adds 80% diversion target for 2020, and adds diversion targets by sector</p>	<p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
Section A: Integrated Solid Waste and Resource Management Plan			
<p>Resource Management Principles: The 5R's</p> <p><u>Reference Page 7 Appendix II</u></p>	<p><u>(3) Newly Added Language:</u></p> <p>Public Health Principles</p> <ul style="list-style-type: none"> • Emphasis on investing in upstream preventative solutions as opposed to downstream problem management. In the case of managing the waste stream, this principle requires increasing investment towards reducing waste generation. • Fairness and equity. The costs and benefits of the plan will be distributed fairly among population groups. • Transparency. Decisions are made through processes that enable meaningful public input throughout the planning and implementation phases, including final decisions on waste management facility, technology and site selections. • Sustainability. The plan will sustain population health and wellness not only for residents of MV but also for all British Columbians and globally. 	<p>Public health principles added in response to input from health authorities</p>	<p>Supported</p>
<p>Process and Consultation</p> <p><u>Reference Page 7 Appendix II</u></p>	<p><u>(4) Amended Language:</u></p> <p>As the population grows and circumstances change, the ISWRMP will be reviewed and revised. An ISWRMP progress report will be made every two years and a comprehensive performance review of the plan undertaken every five years, with a full plan review and update every ten years.</p> <p>As the population grows and circumstances change, the ISWRMP will be reviewed and revised. An ISWRMP progress report will be made every two years and a comprehensive review of the plan every ten years.</p>	<p>Adds 5 year review at suggestion of Ministry of Environment</p>	<p>Supported.</p> <p><u>General comment:</u> A more frequent review process may alleviate a lengthy “full plan review and update process” in 2020.</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Aligning with Provincial Initiatives</p> <p><u>Reference Pages 8 & 9 Appendix II</u></p>	<p><u>(5) Newly Added Language:</u></p> <p>BC Air Action Plan. The Air Action Plan seeks to improve air quality across B.C. by promoting clean transportation, clean industry and clean communities.</p> <p>The ISWRMP will contribute to meeting the goals of this program by managing waste locally, imposing the strictest air quality standards on all facilities and reducing emissions in the community through district energy systems.</p> <p><u>(6) Newly Added Language:</u></p> <p>BC Recycling Regulation. This regulation provides a legal framework for establishing extended producer responsibility (EPR) programs managed by industry to promote product stewardship within the province of British Columbia. The underlying goal of this regulation is for producers to accept full life-cycle cost accounting for their products. This would see the costs of the end-of-life management of products treated similarly to other factors of production and incorporated into product prices. Successful EPR shifts the expenses associated with product end-of-life management from taxpayers to producers and consumers.</p> <p>The ISWRMP supports the principles of EPR and includes numerous actions to accelerate EPR program development and implementation.</p> <p><u>(7) Deleted Language:</u></p> <p>LiveSmart BC. This program aims to support low-carbon communities through incentives for energy savings and GHG reduction in homes and businesses, on the road, and in the community.</p> <p>The ISWRMP facilitates opportunities for the residential and commercial sectors to reduce their contribution to GHG emissions through waste reduction, reuse, recycle and regional organic waste management.</p>	<p>adds reference to BC Air Action Plan at the suggestion of the Technical Forum</p> <p>adds reference to BC Recycling Regulation at the recommendation of the Reference Panel</p> <p>The Livesmart BC program has been discontinued</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Aligning with Provincial Initiatives (continued)</p> <p><u>Reference Page 9 Appendix II</u></p>	<p><u>(8) Deleted Language:</u></p> <p>FIGURE 1: KEY CONNECTIONS BETWEEN PROVINCIAL PLANS AND METRO VANCOUVER'S INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN</p>	<p>Diagram became too complex with references to additional provincial programs</p>	<p>Supported</p>
<p><u>Newly Added Section:</u></p> <p>Aligning with Federal Initiatives</p> <p><u>Reference Page 9 Appendix II</u></p>	<p><u>(9) Newly Added Language:</u></p> <p>CCME Canada Wide Action Plan for Extended Producer Responsibility. The Canadian Council of Ministers of the Environment (CCME) have adopted a waste management approach which extends the responsibility of producers for management of products to the end of the product life. Through the Canada-wide Action Plan for EPR, the CCME and the province of British Columbia are working towards the development and implementation of additional EPR programs intended to have producers accept full life-cycle cost accounting for their products. This would see the costs of the end-of-life management of products treated similarly to other factors of production and incorporated into product prices. The draft ISWRMP supports the principles of EPR and includes numerous actions to accelerate EPR program development and implementation.</p>	<p>Added at suggestion of the Reference Panel</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
Governance, Roles & Responsibilities <u>Reference Page 12</u> <u>Appendix II</u>	<p>(10) <u>Newly Added Language:</u></p> <p>In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of these facilities. Where conflicts may exist between agreements related to such facilities and this plan, including the Tri-Partite Agreement between Delta, Vancouver and Metro Vancouver, this plan takes precedence.</p>	clarifies legal precedence of Plan over existing agreements	Supported
Approved Facilities <u>Reference Page 15</u> <u>Appendix II</u>	<p>(11) <u>Deleted Language:</u></p> <p>• Any new waste-to-energy facility established through a competitive process and subject to an environmental assessment as required by provincial and federal regulation</p> <p>(12) <u>Newly Added Language:</u></p> <p>Metro Vancouver will work with the Province to map and catalogue private and public landfills operating or closed in the Metro Vancouver region.</p>	<p>moved to New Facilities Section at the suggestion of the Ministry of Environment</p> <p>added at the request of the Ministry of Environment</p>	<p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>New Facilities</p> <p>Reference Pages 16 & 17 Appendix II</p>	<p><u>(13) Newly Added Language:</u></p> <p>Municipal solid waste in the region may be directed for management to any new facility contemplated by this plan provided the new facility follows the process for development as outlined herein.</p> <p>New facilities specifically contemplated in this plan include:</p> <ul style="list-style-type: none"> • Any new organics processing facility established pursuant to Goal 2 of this plan • Any new waste-to-energy facility located within the region established pursuant to Goal 3 of this plan • Any new waste-to-energy facility located outside the region established pursuant to Goal 3 of this plan • Any additional landfill pursuant to Goal 4 of this plan <p>Process for development of new facilities shall include but not be limited to:</p> <ul style="list-style-type: none"> • Appropriate procurement process • Environmental assessment, including an assessment of human health risk acceptable to the applicable health authority, as may be required by provincial and federal regulations • Suitable public consultation program as may be required by environmental assessment process <p><u>(14) Newly Added Language:</u></p> <p>Establishment of new facilities may also be performed with consideration for provincial requirements in addition to Metro Vancouver’s regional needs. If new facilities are established to service Metro Vancouver and any other regional district, references in this plan to waste flows, contingency plans, refer only to quantities of waste from Metro Vancouver. The Ministry of Environment may vary these provisions to accommodate, and only accommodate, waste management requirements of other regional districts.</p>	<p>Establishes scope and process for inclusion of new facilities in this plan; included at the suggestion of the Ministry of Environment</p> <p>Provision added to allow Ministry of Environment to vary waste flows and contingency plans if other regional districts were to be serviced by a new facility contemplated in this plan.</p>	<p>It is recommended that the new language be amended to read:</p> <p>“Municipal solid waste in the region may be directed for management to any new regionally or privately owned and operated facility contemplated by this plan provided the new facility follows the process for development as outlined herein..... “</p> <p><u>General Comment:</u> The fostering of privately owned operated waste diversion facilities must be considered to ensure adequate diversion capacity within the region.</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p><u>Newly Added Section:</u></p> <p>Flow Control</p> <p><u>Reference Pages 17 & 18 Appendix II</u></p>	<p><u>(15) Newly Added Language:</u></p> <p>To ensure the sustainability principles embodied within this Plan are fulfilled Metro Vancouver will retain management control of regional disposal facilities. By retaining management control, all waste reduction and diversion goals can be applied uniformly at all regional disposal facilities to ensure equity for all residents and businesses within the region while attaining the goals of this plan.</p> <p>In addition to the requirement for waste to be directed to facilities approved under this plan, Metro Vancouver may choose to act to reduce the flow of waste to unauthorized facilities which may undermine the waste reduction and diversion goals of this plan. These flow control initiatives include but are not limited to:</p> <ul style="list-style-type: none"> • Split fee bylaw • Franchising of waste collection services • Licensing of waste collection service providers <p>If total waste flows are below the capacity of existing and planned facilities, waste disposal facilities will be utilized as follows:</p> <ul style="list-style-type: none"> • Total waste flows in excess of 780,000 tonnes per year: the Vancouver Landfill will be operated to absorb flows in excess of 780,000 tonnes; • Waste flows in excess of 500,000 tonnes per year but less than 780,000 tonnes per year: the Vancouver Landfill be operated only to absorb residuals from the waste to energy plants and as an emergency system in the event that the waste to energy plants cannot absorb waste flows, and the Burnaby facility would have the three furnace lines progressively shut down or converted to alternate fuels as waste flows declined; (Continued on following page) 	<p>Necessary to achieve the objectives of managing waste locally, avoiding overbuilding waste-to-energy facilities and undermining Goals 1 and 2, and reducing waste flow to the Vancouver Landfill; arising from the public consultation and the Corporation of Delta submission</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p><u>Newly Added Section (Continued):</u></p> <p>Flow Control (continued)</p> <p>Reference Pages 17 & 18 Appendix II</p>	<ul style="list-style-type: none"> Waste flows below 500,000 tonnes per year: the Vancouver Landfill would continue to operate to absorb residuals from the waste to energy plants and as an emergency system in the event that the waste to energy plants cannot absorb waste flows, the waste-to-energy facility in Burnaby would be decommissioned or converted to alternate fuels and the new waste to energy facilities would be progressively downscaled or converted to alternate fuels as waste flows decline. 		
Section B: Goals, Strategies, Actions and Measures			
<p>Goal 1: Minimize Waste Generation</p> <p>STRATEGY 1.1 Advocate that senior governments transfer additional waste management responsibilities to producers and consumers</p> <p>Reference Page 19 Appendix II</p>	<p><u>(16) Newly Added Language:</u></p> <p>Metro Vancouver will:</p> <p>1.1.1 Advocate that senior governments progressively move towards the prohibition of the manufacture and distribution of non-essential, non-recyclable materials and products. (2011)</p> <p>1.1.2 Advocate that senior governments prohibit the manufacture and distribution of non-recyclable packaging. (2011)</p> <p>1.1.3 Strongly advocate for Extended Producer Responsibility (EPR) programs to reduce waste disposal through implementation of design-for-environment principles, and best management practices that focus on waste reduction, reuse, and recycling. Offer staffing support for and partnership with Ministry of Environment to help accelerate EPR. (2011)</p> <p>1.1.4 Work with other municipalities and regions across BC, Canada, and internationally, to advocate for more development by senior governments in encouraging and developing incentives, including regulation, that promote design of products with an emphasis on reuse and recycling (cradle-to-cradle design). (2011)</p>	<p>New Language adds strong leadership role for Metro Vancouver in advocacy and tangible support for measures to achieve waste reduction; reflective of public consultation input and suggestion from Health Authorities</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 1: Minimize Waste Generation (Continued)</p> <p>Strategy 1.1 Advocate that senior governments transfer additional waste management responsibilities to producers and consumers</p> <p><u>Reference Page 20 Appendix II</u></p>	<p><u>(17) Newly Added Language:</u></p> <p>1.1.8 Waste projections will consider future trends in population, generation, and management, including EPR. <i>Ongoing</i></p> <p><u>(18) Amended Language:</u></p> <p>Actions requested of other governments and agencies:</p> <p>1.1.10 Ministry of Environment to accelerate EPR program development and implementation. <i>Ongoing</i></p> <p>1.1.10 Ministry of Environment to create a formal partnership with Metro Vancouver representation, to accelerate EPR program development and implementation. 2010</p> <p><u>(19) Newly Added Language:</u></p> <p>1.1.11 Include Metro Vancouver and its member municipalities in the negotiations with producers regarding future EPR programs to ensure that appropriate consideration is given to the existing convenient curb-side collection systems. <i>2010</i></p> <p>1.1.12 Ensure that the waste recovered under EPR programs will be properly managed in the region and that such materials will not be exported without adequate knowledge of and control over its eventual disposition. <i>Ongoing</i></p>	<p>Waste projections will consider future trends including EPR, recommendation of Reference Panel</p> <p>Clarifies it is Ministry of Environment's responsibility to accelerate EPR, recommendation of Reference Panel</p> <p>added provisions related to the transition to EPR; at the suggestion of the Reference Panel</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 1: Minimize Waste Generation (Continued)</p> <p>Strategy 1.3 Provide information and education on options to reduce waste</p> <p>Reference Page 21 Appendix II</p>	<p><u>(20) Added Language:</u></p> <p>The amount of waste we produce is directly linked to the amount and type of goods and services we consume. Providing the public and businesses with an awareness of the consequences of unsustainable behaviour and tools and incentives to change will assist in reducing the generation of waste. <u>Information and education will seek forms of communication which address the barriers created by multiple languages.</u></p> <p><u>(21) Amended Language</u></p> <p>Metro Vancouver will: (a) Target a minimum of 70% diversion goal by 2015 over all sectors and an aspirational goal of 80% by 2020 to be featured in communication materials. <i>Ongoing</i></p> <p>(a) Promote a minimum of 70% diversion goal by 2015 over all sectors - feature in communication materials. <i>Ongoing</i></p> <p><u>(22) Newly Added Language:</u></p> <p>1.3.3 Develop a national zero waste marketing council so that cities across Canada can pool resources and develop common messaging, with national impact, on the need to reduce waste, resulting in informed and educated citizens on waste reduction opportunities. <i>2011</i></p>	<p>Use forms of communication that address the barriers created by multiple languages; recommendation of Reference Panel</p> <p>added 80% diversion target by 2020; reflective of public input</p> <p>evolution of Metro Vancouver's "MetroVancouverRecycles.org" and "3Rs.ca" initiatives</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery</p> <p>Strategy 2.1 Increase the opportunities for reuse</p> <p>Strategy 2.2 Increase the effectiveness of existing recycling programs</p> <p><u>Reference Pages 22 & 23 Appendix II</u></p>	<p><u>(23) Amended Language</u></p> <p>Metro Vancouver will: 2.1.4 Enhance partnerships with the Province, industry, academia and community groups to research and develop solutions to overcome barriers to reuse and recycling and new opportunities to re-engineer recycled material. 2011</p>	<p>include community groups; recommendation of Reference Panel</p>	<p>Supported</p>
	<p><u>(24) Amended Language</u></p> <p>2.2.1 (b) Expand the monitoring and enforcement of disposal bans and enhance with effective communications to raise awareness of the bans. 2011</p> <p>(b) Continue the monitoring and enforcement of the disposal bans.</p>	<p>expands disposal ban enforcement; recommendation of Reference Panel</p>	<p>Supported</p>
	<p><u>(25) Newly Added Language:</u></p> <p>2.2.2 (d) Work with other information sources to achieve maximum harmonization possible. <i>Ongoing</i></p>	<p>Adds intention to seek harmonization; recommendation of Reference Panel.</p>	<p>Supported</p>
	<p><u>(26) Amended Language</u></p> <p>2.2.3 (b) In collaboration with municipalities, undertake a business case review of the residential and ICI waste and recycling collection services over the region to determine and implement the appropriate level of consistency between municipalities. Where appropriate, Metro Vancouver will develop model policies or bylaws to assist municipalities in achieving consistency. 2012</p> <p>2.2.3 (b) In collaboration with municipalities, undertake a business case review of the residential and ICI waste and recycling collection services over the region to determine and implement the appropriate level of consistency between municipalities. 2012</p>	<p>Adds the possibility of model policies and bylaws; based on suggestion from Health Authorities.</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.2 Increase the effectiveness of existing recycling programs (Continued)</p> <p><u>Reference Pages 23 & 24 Appendix II</u></p>	<p><u>(27) Newly Added Language:</u></p>		
	<p>2.2.3 (c) Analyse the effectiveness of pricing strategies and other economic instruments to encourage additional recycling. <i>2012</i></p>	<p>adds economic instruments to promote recycling; based on public consultation input and reference panel</p>	<p>Supported</p>
	<p><u>(28 & 29) Amended Language:</u></p>		
	<p>2.2.4 (a) Establish a stakeholder and municipal work group to determine the scope, terms and conditions including the responsibility for funding and operating, and the relationship to existing and planned EPR programs and municipal recycling depots for participating municipalities and industries. <i>2010</i></p>	<p>Clarifies the need for initial consultation and definition process for Eco-Centres (based on public consultation and municipal input and that the responsibility for operating and funding Eco-Centres will be determined by stakeholder work group (as directed by the Waste Management Committee)</p>	<p>Supported</p>
<p>2.2.4 (a) Establish a work group to determine the terms and conditions for participating municipalities and industries and the means of integrating Eco-Centres into Metro Vancouver's transfer stations and municipal depot systems. <i>Ongoing</i></p>			
<p><u>(30) Amended Language:</u></p>			
<p>2.2.4 (b) Develop the model of Eco-Centres to include numerous, small scale, one-stop-drop centres for recycling and small quantity drop-off disposal. <i>Ongoing</i></p>	<p>clarify Eco-Centres are not limited to a few large facilities; response to input from public</p>	<p>Supported</p>	
<p>2.2.4 (b) Develop the model of Eco-Centres, new one-stop-drop centres for recycling. <i>Ongoing</i></p>			

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.2 Increase the effectiveness of existing recycling programs (Continued)</p> <p><u>Reference Pages 24 & 25 Appendix II</u></p>	<p><u>(31 & 32) Amended Language:</u></p> <p>2.2.4 (d) After determining terms and conditions including the responsibility for funding and operating, establish the first Eco-Centre in Surrey to replace commitment for residential drop off facility in the 1995 Plan. <i>2011</i></p> <p>2.2.4 (d) After determining terms and conditions, establish the first Eco-Centre in Surrey. <i>Ongoing</i></p>	<p>clarifies commitment to establishing facility in Surrey (based on municipal input) and that the responsibility for operating and funding Eco-Centres will be determined prior to establishment (as directed by the Waste Management Committee.</p>	<p>Supported</p>
	<p><u>(33) Deleted Language:</u></p> <p>2.2.5 (a) Complete pilot studies on Zero Waste initiatives at festivals and events. <i>Ongoing</i></p>	<p>Pilot Study work has already been completed.</p>	<p>Supported</p>
	<p><u>(34) Amended Language:</u></p> <p>2.2.7 (a) implement effective disposal bans for collection of municipal waste at source; <i>Ongoing</i></p> <p>2.2.7 (a) implement disposal bans; <i>Ongoing</i></p>	<p>clarifies municipal commitment; response to public input</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.4 Target demolition, land clearing and construction (DLC) sector for increased reuse and recycling</p> <p>Reference Pages 26 & 27 Appendix II</p>	<p><u>(35) Deleted Language:</u> 2.4.1 Encourage reuse of wood. 2010</p> <p>(a) Examine and, where feasible, implement incentives for reuse and remove barriers to re-use of wood waste. 2010</p> <p>(b) Develop and implement information and education programs on the reuse and effective recycling of DLC waste. 2010</p> <p><u>(36) Amended Language:</u> 2.4.1 In collaboration with municipalities and industry groups, develop a process to require DLC recycling at construction/demolition sites. 2011</p> <p><u>(37) Deleted Language:</u> Actions Requested Of Other Governments And Agencies: 2.4.6 Provincial Government to expand the inclusion of the reuse of wood in building codes. Ongoing</p>	<p>Actions transferred to new Strategy 2.7</p> <p>Actions reordered to reflect priority; recommendation of Reference Panel</p> <p>Action transferred to new Strategy 2.7</p>	<p>Supported</p> <p>Supported</p>
<p>Strategy 2.5 Reduce paper and paperboard being disposed</p> <p>Reference Page 27 Appendix II</p>	<p><u>(38) Newly Added Language:</u> 2.5.1 In collaboration with municipalities, businesses and non-profit organizations, conduct pilot programs to determine the most effective method of reducing unwanted junk mail and other publications and act accordingly on the results.</p>	<p>business and non-profit organizations added; recommendation of Reference Panel</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.6 Target organics for recycling and energy recovery</p> <p><u>Reference Page 28 Appendix II</u></p>	<p><u>(39) 2.6.2 Newly Added Language:</u></p> <p>Metro Vancouver will: establish a system for monitoring emissions from organics processing facilities including bioaerosols. 2011 and ongoing</p> <p><u>(40) 2.6.2 Amended Language (continued):</u> In collaboration with municipalities, develop and implement a work plan for the diversion of organic waste, including food waste, from:</p> <ul style="list-style-type: none"> i) single family residences 2012 ii) multi-family residences 2015 iii) the ICI sector 2015 <p>i) single family residences Ongoing ii) multi-family residences Ongoing iii) the ICI sector</p>	<p>Adds monitoring for organics processing facilities; suggestion of the Health Authorities and Reference Panel</p> <p>Adds specific schedule for implementation as outlined in staff report</p>	<p>Supported</p> <p>The 2012 deadline for single family residential organics waste diversion is not practical. Many municipalities must renegotiate contractual terms with their existing curb side collection contractors. In many cases, the nature of organics waste collection requires a significant change in scope to collection service with specialized waste containers, specialized equipment and an increase in resources.</p> <p>Accordingly, it is recommended that the work plan date for diversion of single family residential organic waste be extended to 2015, which is consistent with the multi-family and ICI sector dates as well as the proposed ban on compostable organics at landfills (also scheduled for 2015).</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.6 Target organics for recycling and energy recovery</p> <p><u>Reference Pages 28 & 29 Appendix II</u></p>	<p><u>(41) 2.6.2 Newly Added Language (continued):</u></p> <p>Ban all compostable organics allowed in residential green bins from disposal to landfills and all forms of waste-to-energy, except anaerobic digestion. 2015</p>	<p>Adds ban on organics; based on City of Vancouver submission and public input.</p>	<p>While the City supports a ban on compostable organics by 2015, limiting the manner in which diverted waste material is processed is not recommended. MV and its member municipalities must determine the best use of its diverted waste. To this end, all viable waste diversion technologies must be considered, including, but not limited to, anaerobic digestion and waste-to-energy. On this basis, it is recommended that the language be further amended to read as follows:</p> <p><i>Ban all compostable organics allowed in residential green bins from disposal to landfills and all forms of waste-to-energy, except anaerobic digestion. by 2015</i></p> <p>At this time, the MV region lacks adequate outlets for the processing of organic (food) waste. In order to obtain its 70% diversion goal by 2015, MV has identified that it requires to divert approximately 400,000 metric tonnes of food waste from landfill. However, presently, the regional capacity for processing is only 50,000 metric tonnes per year at the Fraser-Richmond Soil and Fibre (FRSF) facility located in Richmond BC. This is a privately operated facility that joined with MV in a partnership arrangement in 2009. It is presently the sole “regional” facility approved to accept, process and sale 100% of the municipal curb side organics that it receives at its facility.</p> <p>With the eventual development of the Surrey Organics Biofuel facility, processing within the region will increase by an additional 80,000 metric tonnes per year which will raise the annual regional organic processing capacity to 130,000 metric tonnes. With this level of diversion, a net gap of 270,000 metric tonnes of organics remains that requires a disposal outlet to ensure compliance to the region’s 70% diversion goal by 2015.</p> <p>To this end, MV and its member municipalities must support, facilitate and be receptive to viable disparate organic waste diversion technologies via the establishment of both regional and privately owned and operated organics processing facilities to ensure compliance with the ISWRMP by 2015.</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.7 Target wood for reuse, recycle, and energy recovery</p> <p>Reference Pages 29 & 30 Appendix II</p>	<p><u>(42) Newly Added Language:</u></p> <p>Encouraging the reuse, recycling and energy recovery from wood should follow the waste management hierarchy to ensure highest and best use of wood.</p> <p>Metro Vancouver will:</p> <p>2.7.1 Encourage reuse of wood. 2010</p> <p>(a) Examine and, where feasible, implement incentives for reuse and remove barriers to re-use of wood waste. 2010</p> <p>(b) Develop and implement information and education programs on the reuse and effective recycling of wood and other DLC waste. 2010</p> <p>2.7.2 Collect wood for reuse, recycling, and energy recovery at regional transfer stations and eco-centres. Ongoing</p> <p>2.7.3 Encourage highest and best use for wood following the waste management hierarchy in the following priority: Ongoing</p> <ul style="list-style-type: none"> (f) reuse wood for comparable structural and non-structural applications, (g) recycle wood fibre into other fibre based products, (h) compost wood with other organic materials (i) digest wood to produce biofuels (j) process wood as a fuel for energy production. <p>2.7.4 Pass by-laws as required to support highest and best use of wood as outlined in 2.7.3 Ongoing (as required)</p> <p>2.7.5 Ban all wood from disposal. 2015</p> <p>Actions Requested Of Other Governments And Agencies:</p> <p>2.7.6 Provincial Government to expand the inclusion of the reuse of wood in building codes. Ongoing</p>	<p>Expanded initiatives for wood diversion; based on input from the City of Vancouver and public input.</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery(Continued)</p> <p>Strategy 2.9 Target multi-family and industrial, commercial and institutional (ICI) sectors to improve diversion rates</p> <p>Strategy 2.10 Develop contingency plans for the loss of recycling markets</p> <p><u>Reference Page 31 Appendix II</u></p>	<p><u>(43) Newly Added Language:</u></p> <p>Actions Requested Of Other Governments And Agencies:</p> <p>2.9.3 The Provincial Government modify the BC Building Code to require that space be provided for recycling collection, sorting and pick-up in multi-family residential and commercial buildings</p> <p><u>(44) Newly Added Language:</u></p> <p>Changes in the local and global economies occasionally affect the demand for recovered and recycled materials.</p> <p><u>Metro Vancouver will:</u></p> <p><u>2.10.1 Manage diverted materials in accordance with the requirements of the Environmental Management Act and regulations in that materials will not be disposed unless all feasible opportunities for higher uses of the materials have been taken. 2011</u></p> <p>Municipalities will:</p> <p>2.10.2 Manage diverted materials in accordance with the requirements of the Environmental Management Act and regulations in that materials will not be disposed unless all feasible opportunities for higher uses of the materials have been taken. 2011</p>	<p>To facilitate recycling in multi-family and commercial buildings; public input</p> <p>Addressing the economic uncertainty of recyclable commodities; municipal and public input</p>	<p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 2: Maximize Reuse, Recycling and Material Recovery (Continued)</p> <p>Strategy 2.11 Integrated Utility Management Advisory Committee</p> <p><u>Reference Page 31 & 32 Appendix II</u></p>	<p><u>(45) Newly Added Language:</u></p> <p>An interagency committee would advise Metro Vancouver on the integration of utility systems.</p> <p>Metro Vancouver will:</p> <p>2.11.1 Establish a new overarching committee, the Integrated Utility Management Advisory Committee (IUMAC), to advise Metro Vancouver on plan implementation, particularly from the perspectives of integrated planning and resource recovery across utility systems. 2011</p>	<p>Establishment of a new advisory body; Board direction and consistent with LWMP</p>	<p>Supported</p>
Goal 3: Recover Energy from the Waste Stream after Material Recycling			
<p>Strategy 3.1 Use Waste-to-energy to provide electricity and district heating</p> <p><u>Reference Page 33 Appendix II</u></p>	<p><u>(46) Newly Added Language:</u></p> <p>All waste-to-energy facilities must meet or exceed the minimum energy efficiency required to be classified under the 4th R - Recovery as outlined in European Union standard (PE-CONS 3646/08) and accepted by the Province of BC.</p> <p><u>(47) Amended Language:</u></p> <p><u>Metro Vancouver Will:</u></p> <p>3.1.1 Continue use of existing waste-to-energy facility in Burnaby. (a) <u>Subject to the limitations established in the section titled “Flow Control”, use the facility at its current usage and capacity of 280,000 tonnes per year</u> to recover available energy in the waste remaining after recycling for district energy and electricity generation. <i>Ongoing</i></p>	<p>To establish standards to ensure the beneficial use of both power and heat; response to suggestions by the Ministry of Environment</p> <p>Allows for progressive shut down of Burnaby facility as waste flows decline; response to public input concerning not undermining waste diversion targets and the submission of the Health Authorities</p>	<p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 3: Recover Energy from the Waste Stream After Material Recycling (Continued)</p> <p>Strategy 3.1 Use Waste-to-energy to provide electricity and district heating (Continued)</p> <p><u>Reference Pages 33 & 34 Appendix II</u></p>	<p><u>(48) Newly Added Language:</u></p> <p>3.1.1 (b) Continue to meet the monitoring and emission requirements in Appendix A. <i>Ongoing</i></p>	<p>To confirm commitment to the highest emissions and monitoring standards; in response to suggestion from the Ministry of Environment</p>	<p>Supported</p>
	<p><u>(49) Newly Added Language:</u></p> <p>3.1.1 (d) Operating performance will continue to be reported on a regular and timely basis and will also be available on the Metro Vancouver web site. <i>Ongoing</i></p>	<p>Greater transparency; requested by the Ministry of Environment</p>	<p>Supported</p>
	<p><u>(50) Newly Added Language:</u></p> <p>3.1.1(e) The waste-to-energy facility in Burnaby will comply with applicable legislation and operating contracts may include penalties for any violations of performance criteria.</p>	<p>Strengthens the commitment to achieving the highest environmental performance standards; responding to comments from the Ministry of Environment and the public.</p>	<p>Supported</p>
	<p><u>(51) Amended Language</u></p> <p>3.1.2 Waste-to-energy means any process that converts waste material to energy and heat, including the production of fuel which is subsequently combusted for these purposes. All options will be considered and evaluated fairly and transparently including a public health cost/benefit lens.</p> <p>For the purpose of assessment, waste-to-energy may include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> ● targeted incineration ● industrial use of refuse derived fuel ● gasification/pyrolysis ● anaerobic digestion 	<p>To clarify meaning of waste-to-energy and commitment to transparent evaluation, including public health, of all options; response to submission from Health Authorities.</p>	<p>Supported</p>

	<ul style="list-style-type: none"> • a combination of technologies 		
ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 3: Recover Energy from the Waste Stream After Material Recycling (Continued)</p> <p>Strategy 3.1 Use Waste-to-energy to provide electricity and district heating (Continued)</p> <p><u>Reference Pages 34 to 36 Appendix II</u></p>	<p><u>(52) Amended Language</u></p> <p>3.1.2 (e) Operating performance will be reported on a regular and timely basis and will also be available on the Metro Vancouver web site. Any new waste-to-energy facility will comply with applicable legislation and operating contracts may include penalties for any violations of performance criteria.</p> <p>(e) Monitor the waste-to-energy facility(ies) to ensure compliance.</p> <p><u>(53) Amended Language</u></p> <p>3.1.4 (b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements, including an assessment of human health risk acceptable to the applicable health authority.</p> <p>(b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements.</p> <p><u>(54) Amended Language</u></p> <p>3.1.7 (b) Conduct an environmental impact assessment of a waste-to-energy facility(ies), based on applicable provincial and federal government requirements, including an assessment of human health risk acceptable to the applicable health authority.</p> <p>(b) Conduct an environmental impact assessment of the waste-to-energy facility(ies), based on applicable provincial and federal government requirements.</p>	<p>Strengthens the commitment to achieving the highest environmental performance standards; responding to comments from the Ministry of Environment and the public.</p> <p>Includes a commitment to human health risk assessment; response to submission by Health Authorities.</p> <p>Includes a commitment to human health risk assessment; response to submission by Health Authorities.</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 3: Recover Energy from the Waste Stream After Material Recycling (Continued)</p> <p>Strategy 3.2 Recover energy from other solid waste management facilities</p> <p><u>Reference Page 37</u> <u>Appendix II</u></p>	<p>(55) Deleted Language</p> <p>3.3.2 Ban wood from landfill disposal. 2012</p>	<p>Action moved to Strategy 2.7</p>	<p>Supported</p>
Goal 4: Dispose of All Remaining Waste in Landfill, after Material Recycling and Energy Recovery			
<p>Strategy 4.1 Utilize the Vancouver Landfill as a disposal site</p> <p><u>Reference Page 38</u> <u>Appendix II</u></p>	<p>(56) Amended Language</p> <p><u>Metro Vancouver will:</u></p> <p>4.1.1 Use the Vancouver Landfill to dispose of any remaining waste not directed to waste-to-energy facilities. <i>Ongoing</i></p> <p>4.1.1 Use the Vancouver Landfill to dispose of any remaining waste not directed to waste-to-energy facilities, subject to any fixed limits identified in the Operational Certificate of the landfill, related contracts, agreements between Vancouver, Delta, and Metro Vancouver and regulations.</p>	<p>Change recognizes requirement of the Environmental Management Act that the Plan has precedence over other instruments.</p>	<p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
<p>Goal 4: Dispose of All Remaining Waste in Landfill, after Material Recycling and Energy Recovery (Continued)</p> <p>STRATEGY 4.1 Utilize the Vancouver Landfill as a disposal site (Continued)</p> <p><u>Reference Page 38 & 39 Appendix II</u></p>	<p><u>(57) Newly Added Language:</u></p> <p>4.1.1 (a) Metro Vancouver will work with the City of Vancouver and Corporation of Delta to reduce the quantity of waste going to the Vancouver Landfill to a maximum of 100,000 tonnes annually, exclusive of waste-to-energy residuals, by 2020. Should these reductions not be achieved because overall waste flows exceed the combined capacity of disposal options, Metro Vancouver will evaluate cost effective alternatives and if appropriate seek an amendment to this plan to expand waste-to-energy capacity to further reduce waste flows to the Vancouver Landfill.</p> <p><u>(58) Amended Language:</u></p> <p>Municipalities (City of Vancouver and the Corporation of Delta) Will:</p> <p>4.1.3 Work with Metro Vancouver to accommodate residual waste flows at the Vancouver Landfill.</p> <p>4.1.3. Work with Metro Vancouver to accommodate residual waste flows at the Vancouver Landfill subject to any fixed limits identified in the Operational Certificate of the landfill, related contracts, agreements and regulations Ongoing</p>	<p>future flow reductions to the Vancouver Landfill; input from Corporation of Delta.</p> <p>Change recognizes requirement of the Environmental Management Act that the Plan has precedence over other instruments.</p>	<p>Supported</p> <p>Supported</p>

ISWRMP Section	Amendments	Rationale	Engineering Staff Comments
Performance Measures and Adaptive Management			
<p>Performance Measures</p> <p>Goal 1: Minimize Waste Generation</p> <p>Goal 2: Maximize Reuse, Recycling and Material Recovery</p> <p>Adaptive Management (Relocated Section)</p> <p>Goal 4: Dispose of all Remaining Waste in Landfill, after Material Recycling and energy Recovery</p> <p><u>Reference Pages 41 & 42 Appendix II</u></p>	<p><u>(59) Amended Language:</u></p> <ul style="list-style-type: none"> • Waste generation quantities for all sectors tracked year-over-year and on a rolling five year basis. • Waste generation per capita for residential and commercial waste tracked year-over-year and on a rolling five year basis <p><u>(60) Newly Added Language:</u></p> <ul style="list-style-type: none"> • Waste disposed per-capita tracked year-over-year <p><u>(61) Entire section relocated from Goal 4</u></p>	<p>Introduced tracking by sector; in response to municipal input</p> <p>waste disposal per-capita added; recommendation of Reference Panel</p> <p>This entire section, named “Adaptive Management” was relocated from Goal 4 as it applies to all goals; recommendation of Reference Panel</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p>