

## **AVICC: Solid Waste Workshop**



June 19, 2015

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# **Workshop Agenda**

- Introductions
- Project Objectives
- Solid Waste System Overviews
- Solid Waste Management Trends

**Mount Waddington** 

Strathcona

Comox

Valley

Alberni-Clayoquot

Powell

River

Nanaimo

**Cowichan Valley** 

Capital

Sunshine

Coast

- SWOT Analysis
- Break Out Sessions
- Presentations
- Next Steps

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#### Introductions

- Workshop Leader(s)
  - Wilbert Yang, P. Eng., Senior Waste Management Engineer
  - Avery Gottfried, ME, P. Eng., Solid Waste Planning Engineer
  - Jessica Frank, Project Management Coordinator
- AVICC Representatives
  - Your name
  - Who you represent
  - Expectations for the workshop



# **Workshop Objectives**

- Baseline for solid waste management practices for Vancouver Island and Coastal Communities
- Understanding of issues and challenges
- Identify opportunities for collaboration



# **Guiding Questions**

- What are the opportunities to advance solid waste management in the AVICC?
- What can we learn from each other?
- What could we do cooperatively?
- Who should lead?



## **Project Deliverable**

- Report that summarizes workshop objectives
- Presentation in a "Consumer Report" style to help regional districts:
  - Understand solid waste system performance;
  - Identify areas for improvement;
  - Learn from others; and
  - Opportunities for collaboration.





#### **SOLID WASTE MANAGEMENT - FLOW DIAGRAM**



# **AVICC Overview - Disposal**

- Population:
- Population Distribution:
- Disposal (2013):
- Disposal per capita\*:
  - Range:
  - BC Average (2012):

800,000 88% in 4 Regional Districts

- 325,000 tonnes
- 403 kg/capita 286 to 699 kg/capita 570 kg/capita
- Tipping fees (average): \$133/tonne
   Range: \$95 to \$215 /tonne

\* Construction & Demolition disposal figures not complete





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### **AVICC Overview – Disposal per Capita**



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# **AVICC Overview – Available Landfill Disposal Capacity**



# **AVICC Overview – Garbage Tipping Fees**



Total disposal cost (tipping fee x garbage tonnage) = \$38.8 million



# **AVICC Overview - Recycling**

- Recycling:
  - More recycled than disposed (364,630 tonnes)
  - Almost all communities receives incentives from MMBC
- Recycled per capita (Average): 456 kg/capita
  - Range 86 to 595 kg/capita
- 7 Material Recycling Facilities in the AVICC area
  - CRD
  - CSWM
  - NRD

#### **AVICC Overview – Recycling per capita**



# **AVICC Overview - Organics**

- Ladysmith, BC one of the first to start collecting food waste from residents
- CowichanVRD, RDN and CRD are collecting residential food waste
- Food waste composting facilities in RDN, CowichanVRD, and Sunshine Coast
- Private yard waste composting facilities in all regional districts
- Communities across Canada are considering food waste diversion

Organics diversion total: 65,000 tonnes per year



# **Solid Waste Management Plan**

**Year of Approval** 



# **Summary - Alberni Clayoquot**

- SWMP Approved
- Population 30,876
- Per Capita Disposal 699 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity
- \$95 /t

**70 yrs** 

4,700 t

409 t

22%

2008



- Recycling
- Organics (yard)



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# **Summary - Alberni Clayoquot**

- Priorities
  - Implementing the OCC disposal ban
  - Can achieve 50% diversion
  - Possible construction and wood waste ban
- Opportunities for collaboration
  - Finding facilities for materials that ACRD plans to ban from disposal e.g. organics and wood waste



# **Summary - Capital**

- SWMP Approved
- Population
- Per Capita Disposal 368 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity

372,463 368 kg/y 52%

1995\*

\$110 /t

30 yrs



- Recycling
- Organics

132,057 t 15,219 t



# **Summary - Capital**

- Priorities
  - Revision of SWM Plan. Currently in Phase 3
  - Develop integrated food waste processing capacity in the region (currently exporting to Cowichan Valley and/or Harvest Power in Richmond)
  - Develop a sustainable financial model for SWM
- Opportunities for collaboration
  - Financial sustainability models
  - Shared landfill space be part of the solution
  - Consolidation of tonnages for shared facility (WTE)



# Summary – Comox Strathcona WM

2013

- SWMP Approved
- Population
- 610 kg/yr Per Capita Disposal
- **Diversion Rate**
- **Tipping Fee**
- **Disposal Capacity**

104,950 51% \$120 /t 4 yrs\*



- Garbage 64,292 t
- Recycling
- Organics (yard)

62,436 t

4,690 t



# Summary – Comox Strathcona WM

- Priorities
  - Construct a new landfill by 2017
  - Build a regional composting facility in the next few years
  - Closure of Campbell River Landfill
  - Construct new Transfer Station to support the new landfill
  - Finding the funds to do all the work
- Opportunities for collaboration
  - Benefits of economies of scale from working together
  - Opportunity for a shared mega landfill (consolidated service and fee to include transportation)



# **Summary – Cowichan Valley**

- SWMP Approved
- Population
- Per Capita Disposal 286 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity
- 286 kg/ 74%

1995\*

81,704

\$140 /t

0 yrs\*

66,918 t

- Garbage 23,333 t
- Recycling
- Organics 11,356 t



# **Summary – Cowichan Valley**

- Priorities
  - Finding a local solution to garbage disposal
  - Composting facilities have odour issues that require a technological resolution
- Opportunities for collaboration
  - Local solutions to garbage disposal e.g. collaboration for landfill or WTE facility
  - High tech organics processing solutions
  - Leakage loss of solid waste to other jurisdictions



# **Summary – Mount Waddington**

- SWMP Approved 1996\*
- Population 11,523
- Per Capita Disposal 600 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity

32% \$115 /t

**70 yrs** 

986 t

2,011 t

- Garbage 6,243 t
- Recycling
- Organics (yard)



# **Summary – Mount Waddington**

- Priorities
  - Need to provide services for small isolated communities poor transport links, long distances
  - Cost benefit analysis of introducing organics collection
- Opportunities for collaboration
  - Primarily there to observe
  - Have invested in the landfill and are happy with program
  - Concern over impact of StewardsChoice if undercuts MMBC, rural communities will suffer



# **Summary – Nanaimo**

- SWMP Approved
- Population
- Per Capita Disposal 335 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity

150,040 335 kg/y

2004\*

68% \$125 /t

25 yrs



• Garbage 52,237 t

Recycling

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Organics

86,603 t 26,250 t

# **Summary – Nanaimo**

- Priorities
  - SWM Plan review underway
  - Managing waste export could look at changing by-laws
  - Sustainable financing for the system because of export tipping fees are not providing sufficient revenue
  - Looking at pre-sort facilities, maybe using a MRF
  - Long term disposal options
- Opportunities for collaboration
  - Cooperative approach to marketing recyclables
  - Potential for a joint WTE facility



# **Summary – Powell River**

- SWMP Approved
- Population
- Per Capita Disposal 510 kg/yr
- Diversion Rate
- Tipping Fee
- Disposal Capacity
- 41% \$215 /t

1996\*

19,906

0 yrs

5,367 t

1,950 t



- Recycling
- Organics (yard)



# **Summary – Powell River**

- Priorities
  - Finalize SWM Plan
  - Implement organics diversion program
  - Expand EPR beyond existing programs local opportunities
  - Resource recovery centre applied for grant
- Opportunities for collaboration
  - Possibility of using another regions' landfill for disposal
  - Exploring all options for residuals (after max. diversion)



# **Summary – Sunshine Coast**

- SWMP Approved
- Population
- Per Capita Disposal 352 kg/y
- Diversion Rate
- Tipping Fee
- Disposal Capacity

29,584 352 kg/yr 50%

2011

\$150 /t

15-20 yrs



Garbage 10,229 t
Recycling 5,563 t
Organics 3,318 t

# **Summary – Sunshine Coast**

- Priorities
  - 24 Initiatives in SWMP
    - Including curbside organics and EOW garbage collection
  - Closure of Pender Harbour Landfill and conversion to a TS
  - Reviewing priorities for post 2015
- Opportunities for collaboration
  - Developing financially sustainable SWM models
  - Information sharing
  - Service delivery for rural residents



#### **Solid Waste Management Trends**



# **Trends – Recycling**

- Materials changing:
  - Less paper (mainly ONP)
  - Less glass
  - More plastic
- EPR support (MMBC)
  - Money good
  - Restrictions on what is collected
- Collection approach changing:
  - Glass being excluded
  - Single stream vs source separated



# **Trends – Organics Management**

- Organics typically 40% of the disposal stream
- More and more communities diverting organics (food waste and soiled paper)
- Collection approaches include:
  - Food and yard waste (Metro Van municipalities)
  - Source separated food waste (CVRD, RDN and Toronto)





# **Composting Process**





#### **Anaerobic Process**





# **Trends – Organics Management**

- Odour management primary concern for facilities
- Bi-weekly garbage collection and weekly organic collection is resulting is 80% diversion of organics in the waste stream



# **Trends – Organics Management**

- Many technologies available
- Anaerobic digestion becoming more popular
  - Composting still required to transform organic material into a quality soil amendment





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- Not a disposal option
- Converts waste materials to energy
- Usually another process required after WTE process



# **Trends – Waste To Energy (Thermal)**

- Mass Burn Metro Vancouver
- 280,000 tonnes/yr
- Generates high pressure steam that can be used for industrial processes or make electricity (25 MW)
- Mass reduction: 80%
- Volume reduction: >90%



- Issues:
  - Air emissions
  - Cost
  - Residuals (Fly ash & Bottom ash)
- Cost from Tri-Regional District Study:
  - Capital Cost = \$235M
  - Capacity = 200,000 t/yr





- Gasification Edmonton
- Supplier: Enerkem
- Start Date: 2015
- Converts MSW into methanol, ethanol and chemical intermediates
- First full scale commercial facility





- Less air emissions (w.r.t. Mass Burn)
- Higher cost (Double)
- Cutting edge issues/delays
- Spent to Date:
  - Capital Cost > \$200M
  - Capacity = 100,000 t/yr





# **Trends – Mixed Waste/Dirty MRFs**

- Controversial approach to recycling
- Parts of US cities use it as a primary form of recycling
  - Quality of recyclables tend to be low
  - Can achieve 50% diversion



# **Trends – Mixed Waste/Dirty MRFs**

- Dirty MRF's can enhance recycling
  - Food waste diversion makes waste drier and easier to sort
  - Potentially more diversion can occur?





# **Trends – Refuse Derived Fuel**

- RDF product produced from dirty MRFs
- Typically used as a replacement for fossil fuels such as coal
- Likely users of RDF:
  - Cement Kilns
  - Coal Power Plants
  - Industrial processes



# What does SWM look like in the AVICC in 50 or 100 years?



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• Exercise to find priorities (top 4-5 points for each area)



# **Strengths, Weaknesses, Opportunities & Threats (SWOT)**

- Help share and compare ideas
- Bring a clearer common purpose and understand of factors for success
- Organize important factors linked to success and failure
- Provide linearity to decision making process



#### Strengths

- AVICC committee and collaboration
- Overall landfill capacity (40 years) allows time for long term planning
- Per capita waste generation rate is below the BC average
- High capture of residential recycling
- Private sector involvement in waste diversion

#### Opportunities

- EPR program collaborating and achieving economies of scale
- Increased organics collection to improve waste diversion
- Collaboration to achieve scale to solutions (processing organics, garbage, recyclables)
- Management of GHG from landfills

#### Weaknesses

- Construction and Demolition Debris (C&D) tracking and disposal
- Industrial, Commercial and Institutional (ICI) waste diversion and recycling
- Tipping fees that drive waste to lower cost options and leakage
- Tipping fees a key source of revenue for funding waste programs (lower disposal rates decrease revenue needed to operate the system)
- Service delivery for rural and remote residents

#### Threats

- Waste export may not be reliable due to boarder concerns, exchange rates
- Federal and provincial legislation changes (also an opportunity)
- Landfill capacity
- Stability and responsibility in EPR programs over time
- Solid waste system resiliency



# **Issues for Further Discussion in Break-Out Groups**

- Items for discussion:
  - Issues
  - Challenges
  - Collaboration Opportunities



# **Break-Out Topics**

- Five Groups
- Vote on following items for discussion:
  - Issues
  - Challenges
  - Collaboration Opportunities
- One or several topics to discuss
- Select a secretary and presenter in each group



# **Break-Out Guiding Questions**

- What Will it Take to Achieve <x> Priority?
- What can we learn from each other?
- What could we do cooperatively?
- Who should lead / be involved?

Sample Identified Needs:

- Policies and Procedures
- Information and Communication
- Performance Standards and Guidelines
- Infrastructure

#### **Next Steps**

- Summary report of various programs
- Workshop results to be included

