Waste to Energy Assessment Expanded Results and Recommendations

Comox Strathcona Waste Management
Select Committee Meeting
April 5, 2018

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Overall Project Objectives

Draft 1

- WTE Update - (2011) assessment
- Siting - four sites - unique challenges
- Current state of technologies and the market
- WTE technologies costs vs. existing engineered landfill

Draft 2 - Scope change

- Increased waste volumes to WTT and Sustane
- Full system costs comparisons

Assessed Technologies – Original Version

Eco Waste Solutions (EWS)

- Conventional combustion
- Numerous reference facilities

Waste Treatment Technologies (WTT)

- Gas through AD and compost
- Numerous reference facilities

Sustane Technologies Inc. (Sustane)

- Proprietary de-bonding and separation
- One reference (Spain), 2018 project in Nova Scotia

**All are labour intensive operations*

Select Committee Presentation
November 2017

Draft 1 – presented → feedback

Only include WTT and Sustane for further analysis

- Increasing waste volume to Technologies
- Full system cost assessment

Vendor follow up - Increased capacity's effect on:

- Capital cost
- Operating cost
- Diversion rate
- Up-keep and upgrades over 50 year projection period

Expanded Version

- Adjusted regional diversion → increased disposal
- Increasing technology throughput
  - Annual increase following population growth
- Full system cost assessment
  - Technology cost in the context of the full solid waste management system cost
  - Compared to system revenue

Long-Term Cost Model
$/tonne – Expanded Version

Increasing capacity - Estimated average disposal cost per tonne				
Option		30 years	40 years	50 years
0	Status Quo	$77	$75	$70
1(a)	WTT in Comox Valley	$169	$163	$161
1(b)	WTT in Campbell River	$180	$173	$171
1(c)	WTT in Gold River	$206	$200	$199
3(a)	Sustane in Comox Valley	$120	$107	$98
3(b)	Sustane in Campbell River	$128	$114	$105
3(c)	Sustane in Gold River	$151	$139	$130

Original vs. Expanded Version
Fixed Technology Capacity

- Decreased diversion rate
  - → Higher disposal
  - → Lower landfilling cost per tonne
    - → Much of the landfilling cost unaffected by the higher tonnages

Full System Cost Assessment

Original model focused on disposal costs only

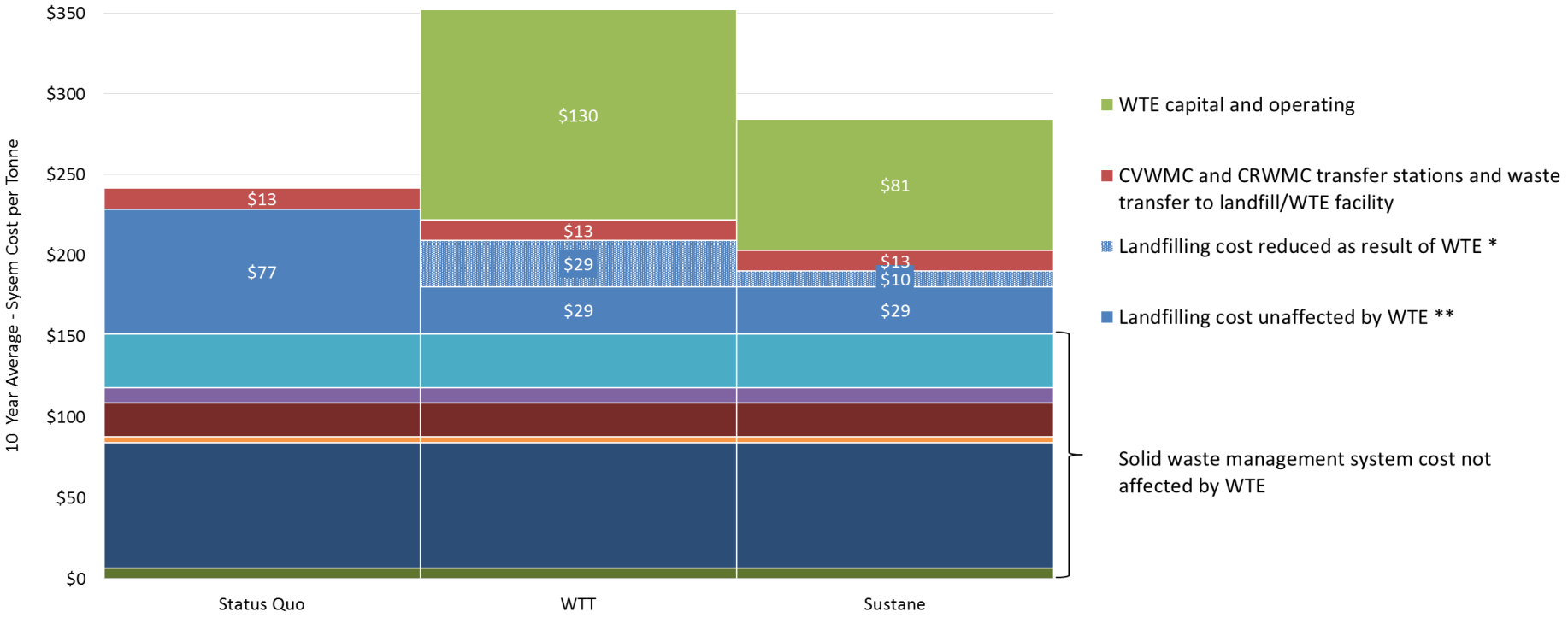
- CVRD staff reviewed full system earlier

1) Cost included in the original long-term model
   - Landfill operation, development and closure cost reduced as result of the WTE facility.
   - Landfill operation, development and closure cost unaffected by the WTE facility.
   - CVWMC and CRWMC transfer stations and waste transfer to WTE facility.
   - WTE capital and operating cost.

2) Revenue (not included in the original long-term model)
   - Tipping fees – current rates
   - Tax requisition, $4M (2017-2018), $6M (2019-2067)

Full System Cost Assessment Increasing Capacity – 10 years

Solid waste management system cost per tonne - First 10 years of WTE operation in Comox Valley
(Increasing capacity)



* CVWMC LF Capital Expansion, Closure and Equipment Costs and Active Landfilling Operating Costs, ** CVWMC Post Closure Costs and CRWMC LF Capital and Operating Costs

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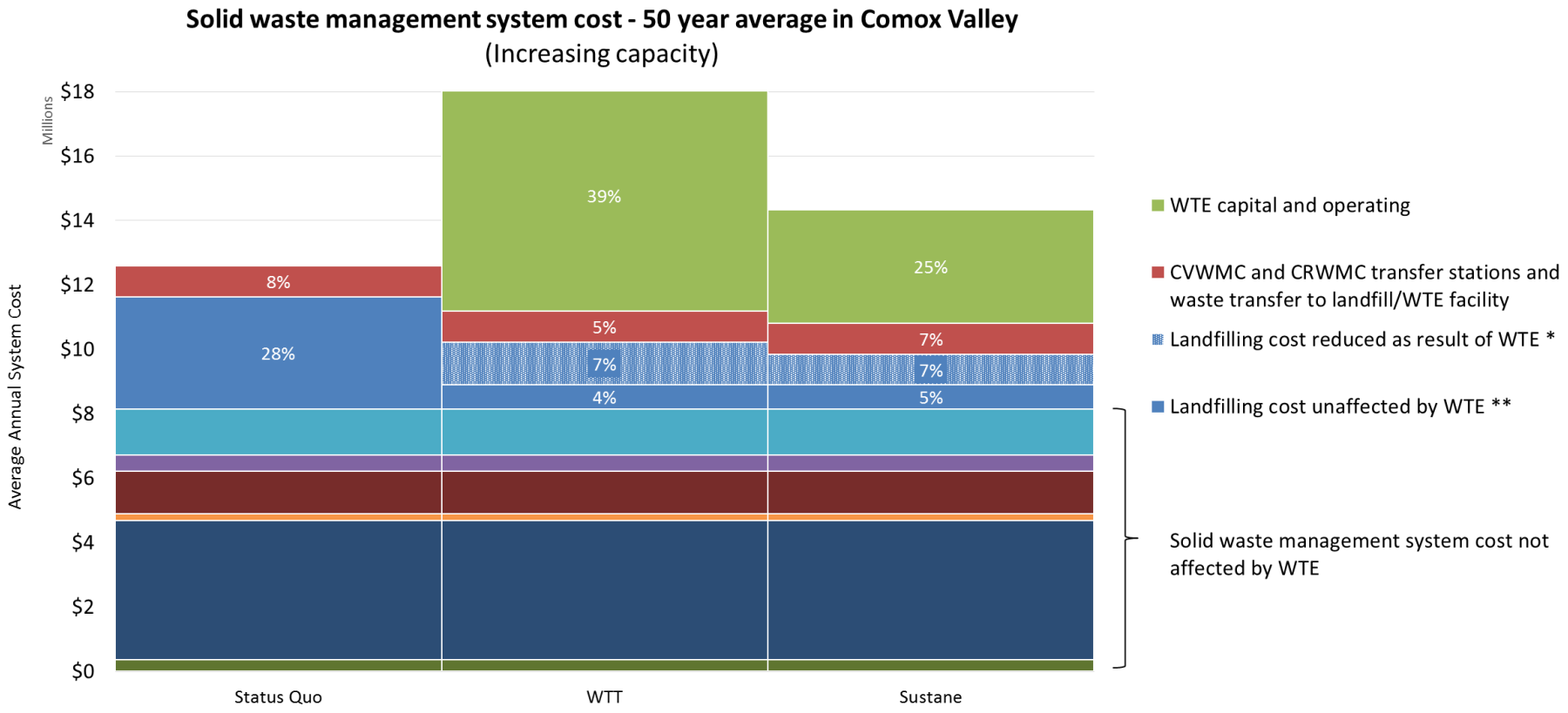
Full System Cost Assessment Increasing Capacity – 50 years



* CVWMC LF Capital Expansion, Closure and Equipment Costs and Active Landfilling Operating Costs, ** CVWMC Post Closure Costs and CRWMC LF Capital and Operating Costs

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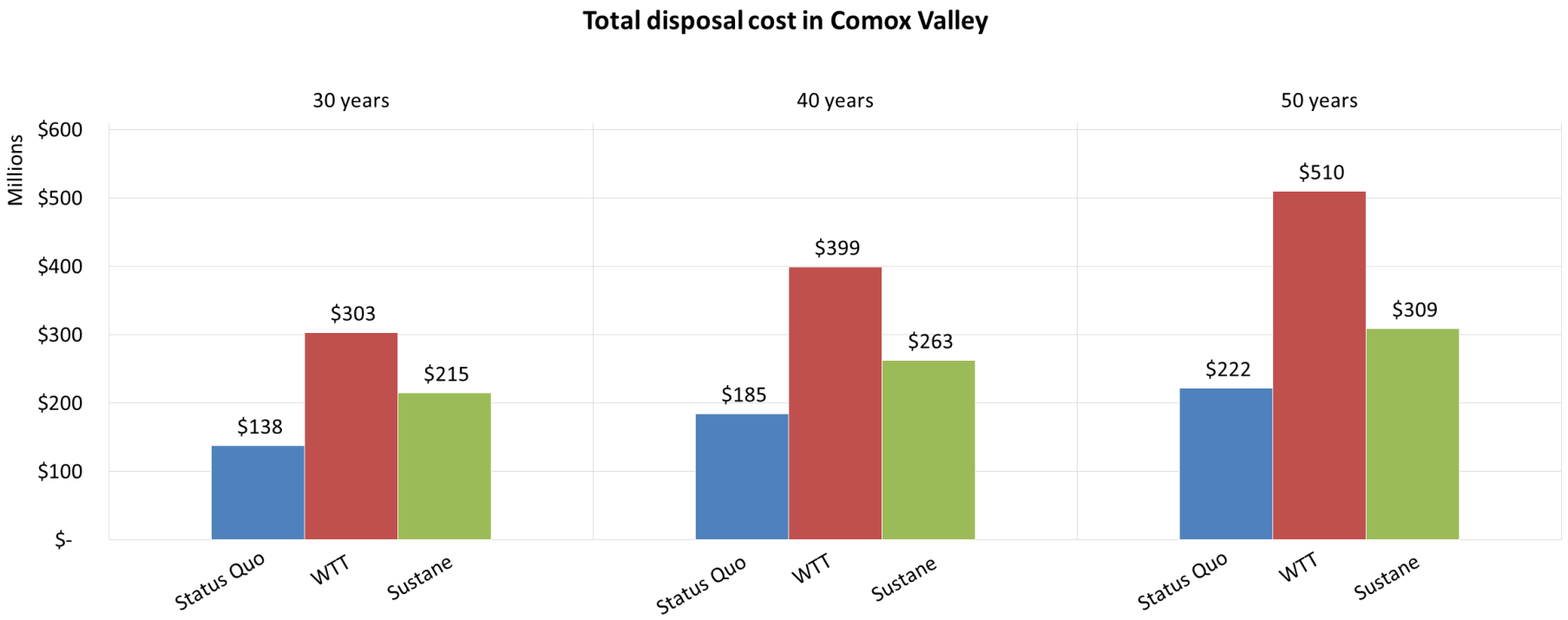
Summary of Total Disposal Cost – Increasing Capacity



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Ministry of Environment Requirements for WTE

- 2010 guidelines require 70% diversion before WTE
  - No update expected
  - Diversion in future will be measured in tonnes per person disposed
- Up-front diversion (source separated) must be optimized before considering WTE/recovery
- Composting considered diversion
- MWP, energy recovery, bio-pellets and RDF considered recovery, not diversion
- MOE will assess WTE on case by case basis

Conclusion

- The cost to continue landfilling is approximately $75/tonne (Expanded Version)
- Waste processing through one of the assessed WTE technology options would increase disposal cost by at least $28 per tonne, projected over a 50 year period
- Sustane provides the lowest cost option, however it remains more costly than landfilling and comes with technology risks

Conclusion

- Current revenue (tax requisition and tipping fees) cover current full cost of the solid waste management system
- Processing through WTT or Sustane would require additional funding
- Landfilling remains the most cost effective waste disposal option for the region

Thank You

Summary of total disposal cost – Increased Capacity

Option	30 years	40 years	50 years
Status Quo	$137,758,000	$184,606,000	$221,847,000
WTT in Comox Valley	$303,298,000	$399,286,000	$509,931,000
WTT in Campbell River	$323,319,000	$422,490,000	$541,216,000
WTT in Gold River	$368,611,000	$489,912,000	$629,138,000
Sustane in Comox Valley	$214,839,000	$262,617,000	$308,930,000
Sustane in Campbell River	$229,749,000	$278,570,000	$330,644,000
Sustane in Gold River	$270,394,000	$339,443,000	$409,949,000