

Notice of Meeting and Meeting Agenda Integrated Resource Management Advisory Committee

Wednesday, April 18, 2018

1:30 PM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

M. Tait (Chair), G. Young (Vice Chair), R. Atwell, B. Desjardins, A. Finall, C. Hamilton, L. Helps,
M. Hicks, R. Windsor, S. Price (Board Chair, ex-officio)

1. Approval of Agenda

2. Adoption of Minutes

2.1. [18-254](#) Minutes of the February 21, 2018 Integrated Resource Management Advisory Committee Meeting

Recommendation: That the minutes of the February 21, 2018 Integrated Resource Management Advisory
Committee meeting be adopted as circulated.

Attachments: [Minutes](#)

3. Chair's Remarks

4. Presentations/Delegations

5. Committee Business

5.1. [18-249](#) Business Case Analysis - Renewable Natural Gas

Recommendation: That the Integrated Resource Management Advisory Committee recommends to the
Environmental Services Committee that:
Staff proceed with the development of a Hartland RNG project plan, for approval and
funding through the 2019 budget process, based on:
* optimizing the sizing of the Hartland RNG project by considering the co-upgrading
RNG from landfill gas, residual treatment facility biogas, and potential Hartland food
waste anaerobic digestion biogas
* initiating the procurement process for an appropriately sized RNG upgrading facility
and associated infrastructure at Hartland landfill
* a 25-year RNG purchase agreement, and associated FortisBC pipeline extension, that
meets the BC Utilities Commission regulation rate of return requirements
* funding the RNG project using available federal and provincial grants, ERM financial
reserves, third party contributions and Municipal Finance Authority debt
* working with CRD municipalities, in 2018, to confirm interest in participating in the
RNG project by supplying feedstock materials, capital investment, and
economic/environmental dividend expectations

Attachments: [Staff Report: Business Case Analysis - Renewable Natural Gas](#)
[Attachment 1: RNG Infographics](#)

6. New Business

7. Adjournment

Next Meeting: June 20, 2018

To ensure quorum, please advise Pat Perna (pperna@crd.bc.ca) if you or your alternate CANNOT attend.

Meeting Minutes

Integrated Resource Management Advisory Committee

Wednesday, February 21, 2018

1:30 PM

6th Floor Boardroom
625 Fisgard St.
Victoria, BC V8W 1R7

PRESENT:

Directors: G. Young (Vice Chair), C. Day (for C. Hamilton), A. Finall, L. Helps, M. Hicks, L. Hundleby (for B. Desjardins), R. Kasper (for M. Tait, Chair), S. Price (Board Chair, ex-officio)
Staff: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; R. Smith, Senior Manager, Environmental Resource Management; E. Gorman, Deputy Corporate Officer; P. Perna, Committee Clerk (Recorder)

Regrets: Directors Atwell and Windsor

The meeting was called to order at 1:40 pm.

1. Approval of Agenda

**MOVED by Director Helps, SECONDED by Alternate Director Day,
That the agenda for the February 21, 2018 Integrated Resource Management
Advisory Committee meeting be approved as circulated.
CARRIED**

2. Adoption of Minutes

- 2.1. [18-102](#) Minutes of the December 13, 2017 Integrated Resource Management Advisory Committee Meeting

**MOVED by Alternate Director Day, SECONDED by Director Helps,
That the minutes of the December 13, 2017 Integrated Resource Management
Advisory Committee meeting be adopted as circulated.
CARRIED**

3. Chair's Remarks - None.

4. Presentations/Delegations - None.

5. Committee Business

- 5.1. [18-074](#) 2018 Board Standing and Select Committees - Terms of Reference (Integrated Resource Management Advisory Committee)

L. Hutcheson provided an overview of the report and the Terms of Reference.

Discussion ensued on the decision to not pursue the IRM pilot project and consultation with the Saanich Wastewater Commission.

MOVED by Director Helps, **SECONDED** by Director Hicks,
That the Integrated Resource Management Advisory Committee recommend that the Environmental Services Committee recommend to the Capital Regional District Board:

That the Terms of Reference for the 2018 Integrated Resource Management Advisory Committee, as attached in Appendix A, be approved.

MOVED by Director Helps, **SECONDED** by Director Hicks,
That the Terms of Reference for the 2018 Integrated Resource Management Advisory Committee, as attached in Appendix A, be amended under 1.0 Purpose to remove bullets a) and b) and add to the first sentence after "...the Board regarding", "waste to resource programs for biosolids, kitchen scraps and/or municipal solid waste including integrated resource management options."

CARRIED

OPPOSED: Director Finall

The Chair called the question, as amended.

MOVED by Director Helps, **SECONDED** by Director Hicks,
That the Integrated Resource Management Advisory Committee recommend that the Environmental Services Committee recommend to the Capital Regional District Board:

That the Terms of Reference for the 2018 Integrated Resource Management Advisory Committee, as attached in Appendix A, be approved as amended under 1.0 Purpose to remove bullets a) and b) and add to the first sentence after "...the Board regarding", "waste to resource programs for biosolids, kitchen scraps and/or municipal solid waste including integrated resource management options."

CARRIED

OPPOSED: Director Finall

5.2. [18-075](#) Award of Contract 17-1938 - Hauling and Processing of Kitchen Scraps

L. Hutcheson provided an overview of the report.

Discussion ensued on the following:

- the terms of the contract
- timelines for the IRM facility
- obligations to the contractor if there are no kitchen scraps
- the Fisher Road facility

7. Motion to Close the Meeting

MOVED by Director Helps, **SECONDED** by Director Hicks,
That the meeting be closed in accordance with the Community Charter, Part 4, Division 3, 90(1),(k), negotiations and related discussions respecting the proposed provision of a regional service that are at their preliminary stages and that, in the view of the board, could reasonably be expected to harm the interests of the regional district if they were held in public.

CARRIED

The Committee moved to the closed session at 2:08 pm.

The Committee rose from the closed session at 2:20 pm without report and continued with Item 5.2.

5.2. [18-075](#) Award of Contract 17-1938 - Hauling and Processing of Kitchen Scraps

Discussion continued on the following:

- clauses in the contract
- redirection of kitchen scraps if a new facility is built at the Hartland landfill
- options to change tipping fees later if more kitchen scraps were brought directly to the landfill

The question was divided.

MOVED by Director Hicks, **SECONDED** by Director Helps,
That the Integrated Resource Management Advisory Committee recommend that the Environmental Services Committee recommend to the Capital Regional District Board that:
Contract 17-1938, Hauling and Processing Kitchen Scraps, be awarded to D.L. Bins Ltd. from March 1, 2018 to February 28, 2021, at the rate of \$143.73 per tonne and an estimated cost of \$934,245 per year.

MOVED by Director Finall, **SECONDED** by Alternate Director Day,
That the main motion be amended to "refer the report back to staff with the request that staff report back to the next Environmental Services Committee on the ability to negotiate a possible one-year contract price."

DEFEATED

OPPOSED: Directors Helps, Hicks, and Young, Alternate Directors Day, Kasper, and Hundleby, and Board Chair Price

MOVED by Director Hicks, **SECONDED** by Director Helps,
That the Integrated Resource Management Advisory Committee recommend that the Environmental Services Committee recommend to the Capital Regional District Board that:
Contract 17-1938, Hauling and Processing Kitchen Scraps, be awarded to D.L. Bins Ltd. from March 1, 2018 to February 28, 2021, at the rate of \$143.73 per tonne and an estimated cost of \$934,245 per year.

CARRIED

OPPOSED: Director Finall

MOVED by Director Hicks, **SECONDED** by Director Helps,
That the Integrated Resource Management Advisory Committee recommend that the Environmental Services Committee recommend to the Capital Regional District Board that:

The Hartland tipping fee rate for kitchen scraps be maintained at \$120 per tonne.

CARRIED

OPPOSED: Director Finall

6. New Business - None.

8. Adjournment

MOVED by Director Finall, **SECONDED** by Director Helps,
That the February 21, 2018 Integrated Resource Management Advisory Committee meeting be adjourned at 2:43 pm.

CARRIED

Chair

Recorder

**REPORT TO INTEGRATED RESOURCE MANAGEMENT ADVISORY COMMITTEE
MEETING OF WEDNESDAY, APRIL 18, 2018**

SUBJECT **Business Case Analysis – Renewable Natural Gas**

ISSUE

To present the results of the business case for renewable energy infrastructure options at Hartland landfill.

BACKGROUND

The CRD Hartland Landfill was one of the first in the province to beneficially utilize landfill gas and starting in 2003 gas has been collected and used for power production generating the equivalent electricity used by 1100 homes. With current landfill gas collection volumes, the Hartland landfill power generation facility is only able to utilize 50% of the gas collected to produce electricity; the remaining gas is flared. Flaring converts methane to carbon dioxide, minimizing environmental impact but does not achieve beneficial use of the remaining gas. The original Hartland landfill gas infrastructure was sized to accommodate doubling of the power production capacity with the addition of a second power generator.

Hartland landfill gas utilization options are constrained by a lack of direct access to energy users in relatively close proximity to the Hartland site. However, existing electricity and gas utilities have access to markets and infrastructure to facilitate increased landfill gas utilization at Hartland: by increasing the generation of electricity and sale to BC Hydro (Green Power), or by upgrading of landfill gas to Renewable Natural Gas (RNG) and the sale of RNG to FortisBC.

In November 2016, the Board directed staff to work with FortisBC to investigate RNG as a landfill gas utilization alternative and develop an RNG business case outlining the economic and environmental implications of the RNG utilization alternative.

ALTERNATIVES

That the Integrated Resource Management Advisory Committee recommends to the Environmental Services Committee that:

Alternative 1

Staff proceed with the development of a Hartland RNG project plan, for approval and funding through the 2019 budget process, based on:

- optimizing the sizing of the Hartland RNG project by considering the co-upgrading of RNG from landfill gas, residual treatment facility biogas, and potential Hartland food waste anaerobic digestion biogas
- determining market interest in development of an appropriately sized RNG upgrading facility and associated infrastructure at Hartland landfill
- a 25-year RNG purchase agreement, and associated FortisBC pipeline extension, that meets the BC Utilities Commission regulation rate of return requirements

- funding the RNG project using available federal and provincial grants, Environmental Resource Management (ERM) financial reserves, third party contributions and Municipal Finance Authority debt
- working with Capital Regional District (CRD) municipalities in 2018 to confirm interest in participating in the RNG project by supplying feedstock materials, capital investment, and economic/environmental dividend expectations

Alternative 2

That staff proceed with a procurement plan to double the Green Power production capacity at the Hartland power generation facility by:

- giving BC Hydro notice of the CRD intent to expand the Hartland power purchase agreement
- procuring the required equipment to twin the existing Hartland power generation capacity

INTEGRATED RESOURCE MANAGEMENT IMPLICATION

The environmental and financial implications of the RNG project may be optimized by sizing the Hartland RNG infrastructure to allow for the co-upgrading of RNG from multiple feedstocks: landfill gas, residual treatment facility biogas, and potential Hartland food waste anaerobic digestion biogas. These co-upgrading opportunities are highlighted by the three RNG scenarios being evaluated:

- RNG low case – landfill gas
- RNG mid case – landfill gas + organics anaerobic digestion biogas
- RNG high case* – landfill gas + organics anaerobic digestion biogas + residual treatment facility biogas

* RNG high case – upgrading of biogas from Residuals Treatment Facility (RTF) to RNG represents an opportunity to increase the financial value of the biogas.

Integration opportunities relating to the Green Power alternative are not available because the twinning of the existing power capacity would be fully utilized by the landfill gas currently being captured at Hartland, leaving no capacity to process any additional biogas

ENVIRONMENTAL IMPLICATIONS

The environmental impacts of the two alternatives can best be articulated in terms of the CRD's climate change targets and strategies (i.e. the investment's ability to displace the use of fossil fuels). The production of Green Power, based on provincial carbon assumptions, results in a negligible incremental climate change benefit as it displaces electricity that is produced mainly by hydroelectric dams, a low emission source.

When captured and purified, RNG provides a locally produced, carbon neutral energy source. Injection of RNG into the FortisBC gas system displaces the use of fossil fuels and has a measurable impact on greenhouse gas emissions, 50kg per gigajoule (GJ) of displaced natural gas.

Estimated Annual Greenhouse Gas Avoided Emissions

Alternatives	Avoided Emissions
Green Power	0 tonnes/year
RNG (low case) – 200,000 GJ/yr	10,000 tonnes/year
RNG (mid case) – 250,000 GJ/yr	12,500 tonnes/year
RNG (high case)* – 325,000 GJ/yr	12,500 tonner/year

* RNG high case – upgrading of biogas from Residuals Treatment Facility to RNG represents an opportunity to increase the financial value of the biogas.

Initial conversations with the University of Victoria and Institute for Integrated Energy Systems, has resulted in significant interest in exploring the concept of a RNG research centre at Hartland that would have access to a nominal stream of landfill/biogas/RNG for innovation and beneficial use research.

ECONOMIC IMPLICATIONS

ERM activities are substantially funded by landfill tipping fees and there is no reliance on property tax requisitions as a source of funding for this regional service. The strong local economy, and resulting increase in landfill tonnage, has resulted in substantial accumulation of financial reserves within the ERM's various financial reserves, \$42.4 million as of end of 2017. The reserves are split into three main accounts; 1) \$23.4 million in the sustainability fund to stabilize tipping fees due to annual fluctuations in volume and 2) \$9.5 million in capital reserve for future capital investments 3) \$9.5 million to fund the landfill closure liability. As evaluated annually in the audit report, KPMG has identified the liability is fully funded and not expected to be needed until 2050. The total 2017 revenue from the landfill was \$18.3 million, \$4.3 million over plan due to higher quantities of controlled waste and general refuse from the local construction activities.

A substantial investment in solid waste infrastructure is one way of re-investing ERM reserve funds for the benefit of the community. In addition, recently announced federal and provincial programs have identified sectors which support renewable energy production, such as RNG, as being potentially eligible to access funding support.

Green Power and RNG upgrading infrastructure have similar levels of known technology risk, as both landfill gas utilization strategies are commercially proven with many installations worldwide. The projected financial returns of both scenarios are based on financial and technical screening information provided by our consultants and, prior to proceeding with either alternative, will have to be further refined with the development of a detailed project plan and procurement strategy. The economics of the Green Power are based on the extension of the CRD's existing power purchase agreement with BC Hydro. The economics of the RNG opportunity are based on a conservative interpretation of the BC Utilities Commission regulated rate of return and capital structure parameters for natural gas distribution projects.

Economic Implications

	Status Quo	Alternative 1	Alternative 2		
Financial Summary	Base Case	Green Power	RNG Low	RNG Mid	RNG High
ERM Cash Reserves (\$Mil)	\$42.5	\$42.5	\$42.5	\$42.5	\$42.5
Capital Investment (\$Mil)	n/a	-3.0	-23.3	-24.5	-26.2
Net ERM Cash Reserves (\$Mil)	42.5	39.5	19.2	18.0	16.3
Annual Net Impact – Year 3 (\$Mil/year)	\$0.85	\$1.09	\$1.96	\$2.04	\$2.12

INTERGOVERNMENTAL IMPLICATIONS

The methodology chosen to distribute the potential financial and environmental dividends associated with the landfill gas utilization investment has the potential to have significant positive implications for the CRD and its municipalities. Saanich and Victoria have set a 100% renewable energy target by 2050. An RNG project has strong potential to align with the municipal renewable energy targets.

CONCLUSION

The CRD’s investment in landfill gas utilization infrastructure has the potential to create significant economic and environmental benefits. RNG and Green Power both provide an opportunity for strong financial returns on investment. The RNG investment provides additional potential benefits beyond that of the Hartland green power opportunity, including:

- displacement of natural gas on the FortisBC gas distribution system, resulting in avoiding up to 12,500 tonnes/year of CO₂e emissions
- leveraging ERM financial reserves to provide an additional \$700,000/year in investment returns
- additional RNG integration opportunities (kitchen scraps anaerobic digestion, residuals treatment facility biogas upgrading, University of Victoria Renewable Fuel Research)
- Supporting CRD and municipal community and corporate greenhouse gas emission reduction targets and climate action strategy goals

A high level triple bottom line summary of benefits strongly supports further development of the RNG project alternative. The preliminary financial indicators for the RNG alternatives are significantly stronger than the Green Power alternative, with incremental net revenue of approximately \$2 million/year. In addition, the RNG alternative results in substantial greenhouse gas emissions reductions of 10,000 tonnes/year CO₂e. The project also has the potential to be leveraged and used to create additional value by integrating the RNG project with the processing of biogas from the Residuals Treatment Facility and/or processing of biogas from a Hartland based kitchen scraps processing facility.

RECOMMENDATIONS

That the Integrated Resource Management Advisory Committee recommends to the Environmental Services Committee that:

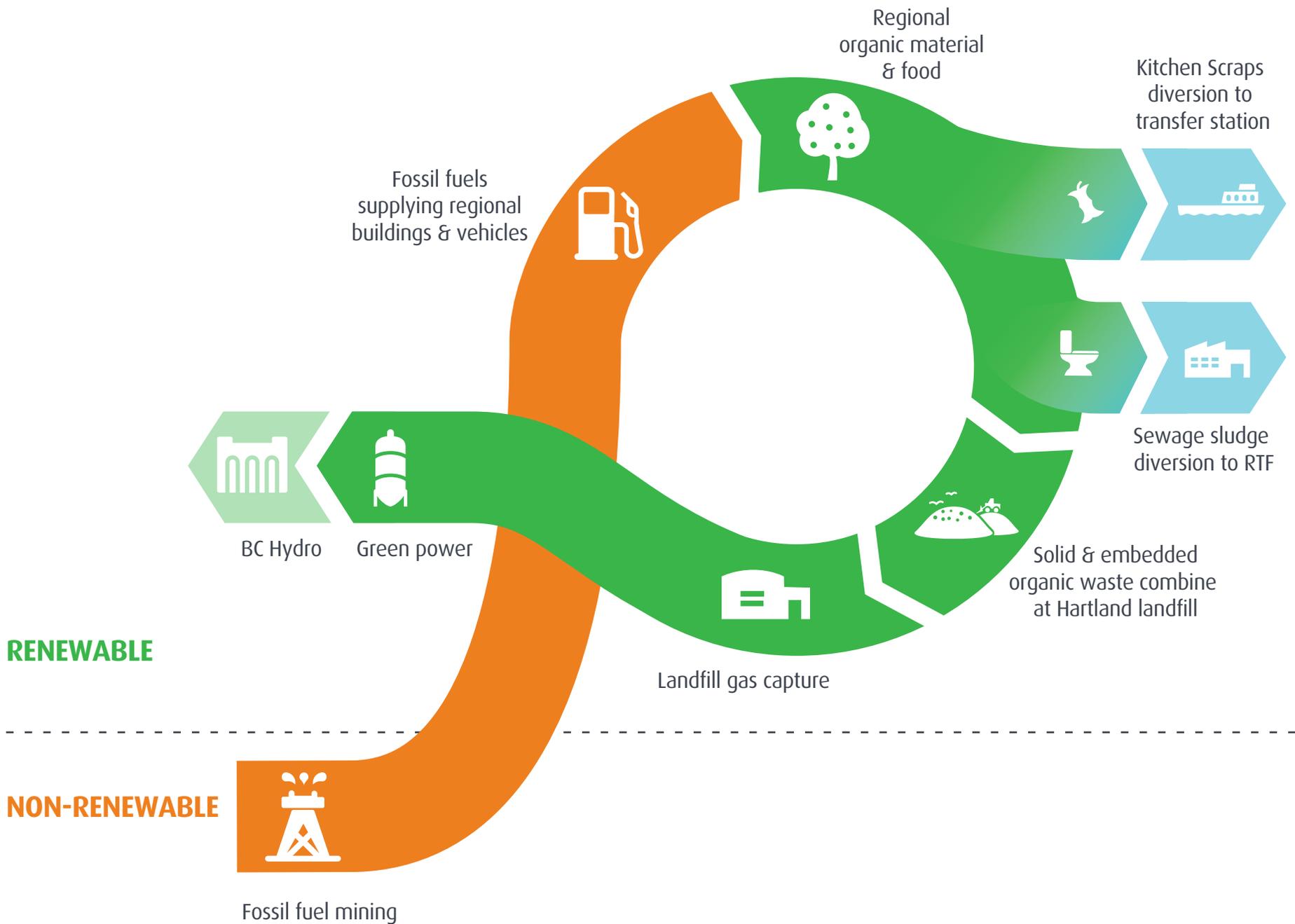
Staff proceed with the development of a Hartland RNG project plan, for approval and funding through the 2019 budget process, based on:

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Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

RS:ac

Current Carbon Cycle



Future Carbon Cycle

