

#### AGENDA

#### INFRASTRUCTURE AND PLANNING COMMITTEE

January 14, 2022, 9:30 AM IN THE COUNCIL CHAMBER

Members

Councillor G. Carra, Chair Councillor S. Sharp, Vice-Chair Councillor A. Chabot Councillor P. Demong Councillor D. McLean Councillor J. Mian Councillor E. Spencer Mayor J. Gondek

#### SPECIAL NOTES:

Public are encouraged to follow Council and Committee meetings using the live stream <u>www.calgary.ca/watchlive</u>

Public wishing to make a written submission and/or request to speak may do so using the public submission form at the following link: <u>Public Submission Form</u>

Members may be participating remotely.

- 1. CALL TO ORDER
- 2. OPENING REMARKS
- 3. CONFIRMATION OF AGENDA
- 4. CONFIRMATION OF MINUTES
  - 4.1. Minutes of the Regular Meeting of the Infrastructure and Planning Committee, 2021 December 1
- 5. CONSENT AGENDA
  - 5.1. DEFERRALS AND PROCEDURAL REQUESTS None

6. <u>POSTPONED REPORTS</u> (including related/supplemental reports)

None

#### 7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

- 7.1. Composting Facility Expansion, IP2022-0018
- 7.2. Mobility Trends in Calgary COVID-19 Transportation System Monitoring (Verbal), IP2022-0087
- 7.3. 2021 Citywide Growth Strategy Monitoring Report, IP2021-1668

#### 8. ITEMS DIRECTLY TO COMMITTEE

- 8.1. REFERRED REPORTS None
- 8.2. NOTICE(S) OF MOTION None
- 9. URGENT BUSINESS
- 10. CONFIDENTIAL ITEMS
  - 10.1. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES
    - 10.1.1. (Postponed) Summary of Current Proceedings, IP2021-1509 Held confidential pursuant to Sections 23 (Local public body confidences) and 24 (Advice from officials) of the *Freedom of Information and Protection of Privacy Act.*

#### Review By: 2024 May 13

 10.1.2. Proposed Method of Disposition (Various Properties) - Enhanced Rationalization, IP2022-0065
 Held confidential pursuant to Sections 23 (Local public body confidences), 24 (Advice from officials), and 25 (Disclosure harmful to economic and other interests of a public body) of the *Freedom of Information and Protection of Privacy Act.*

Review By: 2031 December 31, except Attachments 5 and 6 which shall remain confidential

- 10.2. URGENT BUSINESS
- 11. BRIEFINGS None

#### 12. ADJOURNMENT



#### **MINUTES**

#### INFRASTRUCTURE AND PLANNING COMMITTEE

#### December 1, 2021, 9:30 AM IN THE COUNCIL CHAMBER

PRESENT:	Councillor G. Carra, Chair
	Councillor S. Sharp, Vice-Chair
	Councillor A. Chabot (Remote Participation)
	Councillor P. Demong
	Councillor D. McLean
	Councillor J. Mian (Remote Participation)
	Councillor E. Spencer (Remote Rancipation)
	Councillor S. Chu (Reprote Participation)
	Councillor R. Dhaliwal (Remote Participation)

ALSO PRESENT: General Manager S, Dalgleish General Manager M. Thompson (Remote Participation) Deputy Citly Clerk T, Mowrey Legislative Advisor S. Lancashire

1. CALL TO ORDER

Councillor Carra called the Meeting to order at 9:31 a.m.

2. <u>OPENING REMARKS</u>

ROLL CALL

Councillor Carra provided opening remarks and a traditional land acknowledgement.

Councillol Shabot, Councillor Chu, Councillor Demong, Councillor Dhaliwal, Councillor McLean, Councillor Mian, Councillor Sharp, Councillor Spencer, and Councillor Carra.

#### 3. CONFIRMATION OF AGENDA

#### Moved by Councillor Sharp

That the Agenda for the 2021 December 1 Regular Meeting of the Infrastructure and Planning Committee be confirmed, **after amendment**, as follows:

- by postponing Item 10.1.1 to the 2022 January 14 Regular Meeting of the Infrastructure and Planning Committee;
- by bringing forward Item 7.4 to be dealt with prior to Item 7.3; and
- by adding Item 5.1.2 Deferral Request Inglewood Mixed-Use Fire Station Update - Ward 09 (11 AV SE) - Q1 22, IP2021-1523 to the Consent Agenda.

MOTION CARRIED

#### 4. <u>CONFIRMATION OF MINUTES</u>

4.1 Minutes of the Regular Meeting of Infrastructure and Planning Committee, 2021 November 10

Moved by Councillor Sharp

That the Minutes of the 2021 November 10 Regular Meeting of the Infrastructure and Planning Committee be confirmed.

#### **MOTION CARRIED**

5. <u>CONSENT AGENDA</u>

Moved by Coundillor Sharp

That the Consent Agenda be approved as follows:

5.1 DEFERRALS AND PRODEDURAL REQUESTS

5.1.1 Deterral of Annual RouteAhead Update (TT2012-0833) from Q4 2021 to Q1 2022, IP2021-1601

5.4.2 Deterral Request - Inglewood Mixed-Use Fire Station Update - Ward 09 (11 AV SE) - Q1 22, IP2021-1523

#### **MOTION CARRIED**

6. <u>POSTPONED REPORTS</u>

None

#### 7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

7.1 Real Estate Introduction (Verbal), IP2021-1623

A presentation entitled, "Infrastructure and Planning Committee Real Estate Introduction, dated 2021 November 10", was distributed with respect to Report IP2021-1623. Moved by Councillor Sharp

That with respect to Report IP2021-1623, the following be approved:

That the Infrastructure and Planning Committee receive the Presentation for the Corporate Record.

For: (8): Councillor Carra, Councillor Sharp, Councillor Chabot, Councillor McLean, Councillor Mian, Councillor Spencer, Councillor Chu, and Councillor Dhaliwal

#### MOTION CARRIED

7.2 Citywide Growth Strategy: Aligning the Outline Plan Approval Process for All Growth Management Overlay Areas, IP2021-1554

A presentation entitled, "Citywide Growth Strategy: Aligning the Outline Plan Approval Process for All Growth Management Overlay Areas", was distributed with respect to Report IP2021-1554.

Moved by Councillor Sharp

That with respect to Report IR2021-1554, the following be approved:

That the Infrastructure and Planning Committee recommend that Council:

Hold a public hearing on 2022, January 11 at the Combined Meeting of Council and give three readings to the proposed Bylaw for the amendments to The New Community Planning Guidebook (Municipal Development Plan: Volume 2, Part 1) (Attachment 2).

For: (8): Councillor Carra, Councillor Sharp, Councillor Demong, Councillor McLean, Councillor Mian, Councillor Spencer, Councillor Chu, and Councillor Dhaliwal

Against: (1): Councillor Chabot

#### **MOTION CARRIED**

Committee then dealt with Item 7.4.

Multiple Municipal Historic Resource Designations (City-owned sites) – December 2021, IP2021-1506

This Item was dealt with following Item 7.4.

A presentation entitled, "Multiple Municipal Historic Resource Designations – (City-owned sites)", was distributed with respect to Report IP2021-1506.

Josh Traptow, Heritage Calgary, addressed Committee with respect to Report IP2021-1506.

Councillor Dhaliwal left the meeting at 10:59 a.m.

#### Moved by Councillor Chabot

That with respect to Report IP2021-1506, the following be approved:

That the Infrastructure and Planning Committee recommend that Council:

Give three readings to each of the following proposed bylaws, to designate as a Municipal Historic Resource:

- the Guide-Scout Service Centre (Attachment 2);
- Riley Park (Attachment 3); and
- Senator Patrick Burns Memorial Rock Garden (Attachment 4)

For: (8): Councillor Carra, Councillor Sharp, Councillor Chabot, Councillor Demong, Councillor McLean, Councillor Mian, Councillor Spencer, and Councillor Chu

#### MOTION CARRIED

Committee then dealt with Item 7.5/

7.4 Multiple Municipal Historic Resource Designations (Rrivate-owned sites) – December 2021, IP2021-1502

This Item was dealt with following Item 7.2

A presentation entitled, "Multiple Municipal Historic Resource Designations – (Privately-owned sites)", was distributed with respect to Report IP2021-1502.

Josh Traptow, Heritage Calgary, addressed Committee with respect to Report IP2021-1502.

Moved by Councillor Chabot

That with respect to report IP2021-1502, the following be approved:

That the Infrastructure and Planning Committee recommends that Council:

Give three readings to each of the following proposed bylaws, to designate as a Municipal Historic Resource:

the Arthur Bishop Residence (Attachment 2);

the McPherson Ranch House (Attachment 3);

- the Rideout (Mitchell-Sproule) Residence (Attachment 4); and
- the Wright Residence (Attachment 5)

For: (9): Councillor Carra, Councillor Sharp, Councillor Chabot, Councillor Demong, Councillor McLean, Councillor Mian, Councillor Spencer, Councillor Chu, and Councillor Dhaliwal

#### **MOTION CARRIED**

Committee then dealt with Item 7.3.

7.5 Extension of Secondary Suite Amnesty, IP2021-1614

A presentation entitled, "Extension of Secondary Suite Amnesty", was distributed with respect to Report IP2021-1614.

Councillor Carra left the Chair at 11:01 a.m. and Councillor Sharp assumed the Chair.

Councillor Carra resumed the Chair at 11:05 a.m. and Councillor Sharp returned to her regular seat in Committee.

#### Moved by Councillor Chabot

That with respect to Report IP2021-1614, the following be approved:

That the Infrastructure and Planning Committee recommend that Council:

- Reconsider its decision from the 2021 November 8 Special Meeting of Council with respect to Report C2021-1436 Recommendation 4 a., and the specified Planning Applications fees in Attachment XB, page 12 of 22 (Residential - Secondary Suite/Backyard Suite and Additional Fees -Secondary Suite Registry fee);
- 2. Approve the fee schedule as proposed in Attachment 2 to extend the Secondary Suite Amnesty Program through to 2023 December 31.

For: (8): Councillor Carra, Councillor Sharp, Councillor Chabot, Councillor Demong, Councillor McLean, Councillor Mian, Councillor Spencer, and Councillor Chu

#### **MOTION CARRIED**

8. ITEMS DIRECTLY TO COMMITTEE

8.1 REFERRED REPORTS

None NOTICE(S) OF MOTION 8.2

Nonê <u>URGENT BUSINESS</u> None

10. CONFIDENTIAL ITEMS

- 10.1 ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES
  - 10.1.1 (Postponed) Summary of Current Proceedings, IP2021-1509

This Item was postponed to the 2022 January 14 Regular Meeting of the Infrastructure and Planning Committee during Confirmation of Agenda.

10.2 URGENT BUSINESS

None

#### 11. BRIEFINGS

None

#### 12. <u>ADJOURNMENT</u>

Moved by Councillor Sharp

That this meeting adjourn at 11:27 a.m.

#### **MOTION CARRIED**

The following items have been forwarded on to the 2021 December 20 Combined Meeting of Council:

#### CONSENT

Extension of Secondary Suite Amnesty, IP2021 (614)

ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

- Multiple Municipal Historic Resource Designations (City-owned sites) December 2021, IP2021-1506
- Multiple Municipal Historic Resource Designations (Private-owned sites) December 2021, IP2021-1502

The following item has been forwarded to the 2022 January 11 Combined Meeting of Council:

PLANNING MATTERS FOR PUBLIC HEARING

Citywide Growth Strategy: Aligning the Outline Plan Approval Process for All Growth Management Overlay Areas, 122021-1554

The next Regular Meeting of the Infrastructure and Planning Committee is scheduled to be held on 2022 January 14 at 9.30 a.m.

CONFIRMED BY COMMITTEE ON

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ACTING CITY CLERK

#### Composting Facility Expansion

#### **RECOMMENDATION(S)**:

That the Infrastructure and Planning Committee recommends that Council:

- 1. Direct Administration to negotiate and execute all amendments to the Composting Facility Project Agreement to expand the Calgary Composting Facility (the "Facility") to accommodate an additional 60,000 tonnes per year of Single-Family Residential food and yard waste (the "Project").
- 2. Direct Administration to develop a biogas offtake strategy for the Facility and negotiate and execute any definitive agreements required to implement that strategy.
- 3. Approve a capital budget appropriation of \$50 million to Program 258 Facilities and Equipment funded from a combination of sources, including self-supported debt for the expansion of the Calgary Composting Facility.
- 4. Give first reading to Bylaw 11B2021, being a bylaw authorizing The City to incur indebtedness for financing the Project.

#### HIGHLIGHTS

- The success of Calgary's Green Cart Program has resulted in the Facility processing volumes above its design capacity.
- What does this mean to Calgarians? Additional processing capacity is required to ensure that the food and yard waste is diverted from the landfill in a financially and environmentally responsible manner.
- Why does it matter? The City's landfills have a limited capacity and lifespan. They are expensive to construct, operate, and maintain. It will be unlikely and cost prohibitive to find additional landfill capacity in the future as new landfill applications in Southern Alberta have been largely unsuccessful. Diverting materials that can be turned into new products will ensure we maximize the life of our existing landfills.
- A detailed analysis and comparison was completed to determine the best options to address the additional processing requirements. This included expansion of the Facility compared to outsourcing the excess Green Cart material to a private third party to process. This analysis identified expansion as the preferred option. Expanding the Facility provides the best value to The City and allows Calgarians to continue to divert their food and yard waste from landfills.
- The Project will produce a renewable biogas, providing material improvement to the environmental footprint of the Facility.
- The proposed Bylaw 11B2021 authorizes The City to incur indebtedness of up to \$30 million to partially fund the design and construction of the Project between 2022 and 2025. The total project cost is estimated to be \$50 million.
- The incremental operating expenditure and debt servicing will be partially offset with revenue from the sale of biogas. It is estimated that the net impact to the Green Cart Program monthly charge will be an approximate increase of \$0.20 in each of the years of the 2023-26 cycle.
- Administration is recommending the adoption of the Bylaw 11B2021, as per Sections 251 and 258 of the Municipal Government Act (R.S.A. 2000 c. M-26), to authorize The City to incur indebtedness.
- Strategic Alignment to Council's Citizen Priorities: A healthy and green city

#### **Composting Facility Expansion**

• Previous Council Direction is included as Attachment 1.

#### DISCUSSION

In 2013, Council directed Administration to build a composting facility in anticipation of a Citywide Green Cart Program with an approved budget of \$133 million. The Facility was procured through a Public Private Partnership with a consortium of engineering and construction companies. It resulted in a City-owned, private sector Design-Build-Operate facility with a 10year operations, maintenance, and rehabilitation contract currently being managed by AIM Environmental Group.

The Calgary Composting Facility was designed with the capability to process 100,000 tonnes of food and yard waste from Single Family residential homes, as well as to allow for expansion in the future. The Facility began operation in 2017, and in each year since, demand for the Green Cart program has exceeded initial forecasts and the Facility is currently processing material in excess of its design capacity.

The Design-Build-Operate project agreement provides that The City has the right to expand, improve or otherwise change the Facility and has the right to include additional quantities.

To determine the best value for Calgarians, Administration compared the expansion of the Facility with outsourcing options available to process an additional 60,000 tonnes of food and yard waste per year.

**Option 1:** Expand processing capacity of the existing Calgary Composting Facility.

**Option 2:** Outsource the excess organic material to private sector processors.

Administration retained Ernst & Young Orenda Finance Inc. to complete a comprehensive investigation comparing the two options based on industry best practices in investment analysis and cost benefit assessment. The methodology for the development of the business case (Attachment 2) included a jurisdictional review and market sounding to determine how other municipalities have managed their organics and to gauge private sector interest in processing excess food and yard waste from The City's Green Cart program.

This review resulted in a business case that compared the options against four assessment criteria: Strategic, Economic, Financial, and Deliverability & Operations.

Ernst & Young concluded that the expansion of the current Calgary Composting Facility is the best option for The City to manage the excess material collected due to its financial, environmental, and economic benefits.

#### **Next Steps**

Administration will commence the change order process described in the Design-Build-Operate project agreement once Bylaw 11B2021 (Attachment 3) contained in this report is valid.

Administration will commence development of a biogas offtake strategy for the Facility to assess the commercial options available to The City for the renewable biogas generated from the Project.

Administration will continue to advocate for funding support from other orders of government, while seeking opportunities to secure financing through the Province of Alberta, Infrastructure Canada, federal crown corporations, financial institutions or capital markets to optimize the financing for the Project.

ISC: UNRESTRICTED IP2022-0018 Page 3 of 4

#### **Composting Facility Expansion**

#### STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)

- Public Engagement was undertaken
- Public Communication or Engagement was not required
- Public/Stakeholders were informed
- Stakeholder dialogue/relations were undertaken

Through the Bylaw Approval Process set out in the Municipal Government Act, and the City of Calgary, Bylaw 11B2021 will be included in a public hearing and receive three readings by Council.

#### **IMPLICATIONS**

#### Social

Waste diversion is an integral component to extending the life of our landfills, reducing their impact on climate change, and is a starting point to our transition into a more circular economy where divertible materials can be turned into new products. Expansion of the Facility will ensure the record amounts of organics being diverted by single family residents continues to be processed into nutrient rich compost for use in our gardens and parks.

#### Environmental

Investment in anaerobic digestion technology to pre-process green cart materials will reduce the overall amount to be composted, which will result in lower greenhouse gas emissions from the Facility. The expansion will produce a renewable gas which, when upgraded, can be a direct replacement for natural gas use, further reducing greenhouse gas emissions in the broader environment. The expansion will occur on previously developed land. No new industrial development is required.

#### Economic

Through quantitative analysis of the options, expansion is found to have the lowest total project cost because it extracts the maximum value of the investment that has already been made in the current facility. As planning for the design and construction begins, Administration will continue to look for opportunities to reduce and mitigate risks and lower the overall cost of the project and sees a unique opportunity to partner with an industry leader to maximize value in refining and marketing the biogas generated from the facility.

#### **Service and Financial Implications**

The upfront capital cost estimate (class 4) of expanding the Calgary Composting Facility is \$50 million, anticipated to be spent between 2022 – 2025. The Project will be funded from a combination of sources, including self supported debt as per the table below. Payback of the self supported debt will be over 25 years from the Green Cart program monthly charge. Gas Tax Funding is from Waste & Recycling Services' annual allocation.

#### ISC: UNRESTRICTED IP2022-0018 Page 4 of 4

#### **Composting Facility Expansion**

Source	2022 (\$000's)	2023 (\$000's)	2024 (\$000's)	2025 (\$000's)	Total: (\$000's)
Gas Tax Funding	-	\$5,000	\$5,000	-	\$10,000
Reserve	\$5,300	\$4,700	-	-	\$10,000
Debt	-	\$2,600	\$19,400	\$8,000	\$30,000
Total:	\$5,300	\$12,300	\$24,400	\$8,000	\$50,000

Table showing breakdown by year of the \$50M in Program 258:

The incremental annual operating expenditure is estimated to be in the range of \$5.5 million to \$6.0 million per annum starting in 2026. The incremental operating costs will be partially offset with revenue from the sale of biogas. Additionally, the debt servicing for the borrowing is estimated to be \$1.8 million per annum once the project is completed, but debt servicing will also be paid through construction as debt is issued.

The net impact to the Green Cart program charge due to the expansion of the Composting Facility is approximated to be an increase of \$0.20 on the monthly fee in each of the years of the 2023-2026 cycle. Operating budget and green cart program charge impacts will be brought forward through preparation of the 2023-2026 service plans and budgets.

#### RISK

See attachment 4 for risks associated with the recommendations proposed.

#### ATTACHMENT(S)

- 1. Attachment 1 Previous Council Direction
- 2. Attachment 2 Composting Facility Expansion Business Case
- 3. Attachment 3 Proposed Borrowing Bylaw 11B2021
- 4. Attachment 4 Risk Summary

#### Department Circulation

General Manager/Director	Department	Approve/Consult/Inform
Melanie Cooke	Waste & Recycling Services	Approve
Les Tochor	Finance	Approve
Michael Thompson	Utilities & Environmental Protection	Approve
Carla Male	Chief Financial Officer	Approve
Jill Floen	City Solicitor	Inform

# **Previous Council Direction**

DATE	REPORT NUMBER	DIRECTION/DESCRIPTION
4/27/2015	PFC2015-0322	ORGANICS AND BIOSOLIDS COMPOSTING PROGRAM CAPITAL BUDGET REQUEST Council approved the transfer of an additional \$10 million in capital budget appropriations (Gas Tax Funding grants) from Program 256 - Landfill/Treatment and Program 258 - Facilities & Equipment, to Program 257 – Diversion Infrastructure, for funding of the composting facility. This allowed Waste & Recycling Services to accommodate the capital budget increase within the existing Waste & Recycling Services Infrastructure Investment Plan. PFC2015-0322 also indicated that cost estimates, at that time, demonstrated Green Cart Program costs of \$9.00 to \$9.50 per household month with a net program rate in the range of \$6.50 to \$7.00 per household per month.
11/24/2014	C2014-0863	ACTION PLAN 2015–2018 PROPOSED BUSINESS PLANS AND BUDGETS Council approved Action Plan 2015-2018, including Waste & Recycling Services' operating budget, which included the funding proposed to implement a Green Cart Program in 2017 and the capital budget of \$133.0 million to award the Organics and Biosolids Composting Facility contract.
5/5/2014	C2014-0102	WASTE & RECYCLING SERVICES INDICATIVE RATES AND FEES This report details the 2015-2018 indicative rates and fees for Waste & Recycling Services. Council directed Administration to prepare the Waste & Recycling Services 2015–2018 Action Plan based on the Indicative Rates & Fees outlined in the report, which included an indicative green cart fee of \$6.50/household/month as residents are provided service in 2017 and 2018, with an additional \$2.50/household/month in tax support from black cart savings.
3/17/2014	C2014-0089	2015-2018 WASTE & RECYCLING SERVICE RATE SCENARIOS Council directed Administration to return to the proposed 2014 May 5 Strategic Planning Meeting of Council with indicative rates for the 2015-2018 Action Plan based on: a) The operating and capital requirements provided in this report; and b) including a fee for the residential green cart composting program reinvesting the savings from reduced black cart garbage collection to partially offset the program fee.

5/27/2013	PFC2013-0409	ORGANICS AND BIOSOLIDS COMPOSTING PROGRAM CAPITAL BUDGET REQUEST Council approved the recommendations that Council:1. Direct Administration to commence a public private partnership Design-Build-Operate (DBO) procurement by issuing a Request for Qualifications for the composting facility referred to in Recommendation 2 of report C2013-0246 with an operating agreement term of up to 10 years; 2. Subject to Council approving Administration's recommendations in 2014 regarding alternative operating budget funding options, as referred to in Recommendation 4 of report C2013-0246, direct Administration to issue a Request for Proposal for the composting facility referred to above; 3. Approve a capital budget appropriation of \$133.0 million to Program 257 – Diversion Infrastructure funded from self-supported debt (\$129.7 million) and revenue/reserve (\$3.3 million) for the construction of a composting facility for processing residential food and yard waste and biosolids as detailed in Table 1; 4. Approve a capital budget appropriation of \$25.0 million to Program 257 – Diversion Infrastructure funded from self- supported debt for the site servicing requirements for the Diversion Resource Recovery Campus at Shepard landfill as detailed in Table 2; and 5. Direct that Attachment 4 remain confidential under Sections 16(1)(b), 24(1)(a) & (b)(i) and (c), 25(1)(c) and 27(1) of the Freedom of Information and Protection of Privacy Act until directed otherwise.
4/15/2013	C2013-0246	ORGANICS AND BIOSOLIDS COMPOSTING PROGRAM Through this report WRS was authorized to proceed with preparation of Request for Qualifications (RFQ) and Request for Proposal (RFP) documents for a City-owned, private sector Design-Build-Operate composting facility.
4/15/2013	UCS2013-0037	RESIDENTIAL FOOD AND YARD WASTE PILOT RESULTS The pilot has provided important information on operational costs, collection efficiency, amount and type of material collected and the customer experience. The pilot consisted of weekly collection of a green cart, weekly collection of the blue cart and a change to once every two weeks collection of the black cart. The change to every other week collection for the black cart was important to maximize diversion in both the green and blue carts. Council received the report for information.

4/15/2013	UCS2012-0843	ORGANICS DIVERSION PROGRAM COMPOSTING FACILITY OWNERSHIP AND CONTRACT DELIVERY METHODOLOGY This report was brought to Council on 2013 January 28 and was subsequently referred to the 2013 April 15 Strategic Planning Meeting of Council. The report outlined the investigation and analysis used to select an ownership and contract delivery methodology for delivering an organics composting facility. The recommended delivery method was Design-Build-Operate (DBO) in which The City owns the processing facility that the private sector designs, builds and operates.
7/16/2012	UCS2012-0227	ORGANICS DIVERSION PROGRAM – COMPOSTING FACILITY SITE LOCATION Council approved that, subject to Council approving a capital budget in 2013 Q1, a composting facility be located on City lands within the Shepard landfill, east of 68th Street SE and west of the Transportation and Utility Corridor. Council also directed Administration to proceed with appropriate applications to Alberta Environment and Sustainable Resource Development and that the development approval processes be initiated and carried out as soon as possible for the subject site.
2/29/2012	UCS2012-03	ORGANICS DIVERSION PROGRAM SCOPE OF WORK This report outlined the major milestones toward a city-wide residential food and yard waste collection and composting program including a timetable on when Council will be informed and consulted on key decisions. The Standing Policy Committee on Utilities and Corporate Services received this report for information.
11/7/2011	UE2011-21	RESIDENTIAL FOOD AND YARD WASTE DIVERSION UPDATE Council directed Administration to implement a residential food and yard waste diversion pilot to commence in 2012 and return no later than March 2013 with pilot results and recommendations for an organics diversion program aligned with previous Council direction (UE2011-05).
3/7/2011	UE2011-05	PROGRESS TOWARDS 80/20 BY 2020 IN THE RESIDENTIAL SECTOR Council directed Administration to: 1. Proceed with public engagement on food and yard waste diversion in 2011 and report back with results no later than 2011October;2. Pending Council direction in 2011October, include in 2012-14 Business Plan an organics pilot in 2012; 3. Return to Council no later than 2013 March: a. With

		recommendations, including full operating and capital budget impact, for an organics diversion program to be implemented commencing in 2015-2017 business cycle, and b. With recommendations to proceed with a Request For Proposal in 2013 for design and build of the required composting facility to be operational in 2015-2017 business cycle;
11/26/2007	UE2007-35	80/20 BY 2020 STRATEGY Council approved WRS' 80/20 by 2020 waste diversion strategy, to achieve 80 per cent diversion of waste resources from landfills by the year 2020. The original strategy included a Green Cart Program in 2010. Council directed Administration to incorporate 80/20 by 2020 strategy into the 2009-2011 business plan and budget coordination process.

IP2022-0018 Attachment 2

# City of Calgary Composting Facility Expansion

#### Final Business Case

September 2021



# Notice

Ernst & Young Orenda Corporate Finance Inc. ("EY") has been engaged by The City of Calgary ("The City"), to assist in the development of a business case (the "Business Case" or the "Report") for The City's Composting Facility Expansion project (the "Project").

This Business Case was prepared on The City's instruction, solely for the purposes of The City. It should not be relied upon by any other party, for any other purpose. In preparing this draft Business Case, EY relied upon unaudited statistical, operational and financial data and information from a variety of sources, as well as discussions and consultations with The City and numerous other stakeholders (collectively, the "Supporting Information"). Any differences between the work summarized in this Report and that set forth under the project agreement reflect modifications that were made at The City's request or discussed with The City during the course of the engagement. EY reserves the right to revise any analyses, observations or comments referred to in this Business Case, if additional supporting information becomes available to us subsequent to the release of this Business Case.

EY has assumed the Supporting Information to be accurate, complete and appropriate for purposes of the Business Case. EY did not audit or independently verify the accuracy or completeness of the Supporting Information. An examination or review of financial forecasts and projections, as outlined in the Chartered Professional Accountants Handbook, has not been performed on the supporting information. Accordingly, EY expresses no opinion or other forms of assurance in respect of the supporting information and does not accept any responsibility for errors or omissions, or any loss or damage as a result of any persons relying on this Business Case for any purpose other than that for which it has been prepared.

The Business Case may not have considered issues relevant to any third parties. Any use such third parties may choose to make of the Business Case is entirely at their own risk and we shall have no responsibility whatsoever in relation to any such use, and to the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than The City for our work, for this report or for the opinions formed.

Our Business Case to The City is in part based on inquiries of, and discussions with market participants who have experience in Source Separated Organics ("SSO") processing, as well as development and delivery of associated infrastructure. EY has not undertaken any form of investigation, audit, substantiation or verification procedures for the information, data and documentation provided to us. We have not sought to verify the accuracy of the data or the information provided. Where only anecdotal evidence is available due to limitations with access to underlying contracts and supplementary data, this is clearly stated.

No obligation is assumed by EY to revise this Business Case.

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# **Executive Summary**

Ernst & Young Orenda Corporate Finance Inc. ("EY") was retained by The City of Calgary ("The City") to undertake a business case assessment of the proposed options for the Calgary Composting Facility Expansion project (the "Project").

This business case (the "Business Case" or the "Report") documents the outputs of the evaluation and comparison of options based on available information as provided by The City, market sounding participants, desktop research and lessons learned from precedent comparable projects in Western Canada.

# **Background and Context**

In 2017, The City began their 'Green Cart program' which collects food and yard waste from single-family homes. Waste & Recycling Services ("WRS") manages collection from ratepayers, and after transporting to a City-owned and privately operated composting facility, located at the Shepard Waste Management Facility, Source-Separated Organics ("SSO") are processed through an in-vessel composting process.

The Green Cart program directly supports The City's waste-diversion target of 70% diversion by 2025. This program enables Calgarians to manage their waste responsibly and reduces The City's greenhouse gas emissions. There are numerous other benefits that address the economic, social, environmental, and cultural needs of a growing city aligned with Municipal, Provincial and Federal priorities. To ensure The City realizes its full potential as a global city, it is crucial to invest in infrastructure that serves its citizens. Calgary is expected to grow to two million people over the next 60 years which is an important consideration when planning for future generations.

Today, demand for The City's Green Cart Program is growing - continually exceeding The City's processing capacity. Each year since the program began, The City has collected material in excess of the original design capacity of the facility. As a result, there is a need to gain additional food and yard waste processing capacity to be able to process the additional material collected. The City is seeking to determine how to best manage this expansion. The two (2) options The City is considering in order to solve the capacity constraints are defined as follows:

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#### **OPTION 1: EXPANSION**

Under this option, The City would expand the existing composting facility of The City to be able to process the excess amount of material and gain up to an additional 60,000 tonnes per year processing capacity with The City financing the expansion. Under this option, the City expects to apply horizontal plug flow anaerobic digestion ("HPFAD" or "AD") technology.

#### OPTION 2: OUTSOURCING

Outsourcing material in excess of original design capacity of the existing facility (i.e., over 100,000 tonnes) to private facility operators that can process the additional material. Under this option, The City expects private operators to use a composting facility or AD technology to process the organic material.

Option 2 has been further refined into two (2) sub-options:

- Option 2A ("Outsourcing with Composting") is outsourcing the materials to a private processing facility that will process all organic waste through a composting facility outside city limits.
- Option 2B ("Outsourcing with AD") is outsourcing the materials to a private processing facility within The City of Calgary that will process materials using AD technology, which is consistent with The City's expansion strategy.

Following completion of the conceptual design work by Jacobs Engineering Group Inc. ("Jacobs"), this Business Case has been prepared to determine the most appropriate option for The City.

The following process was undertaken to develop the Business Case and identification of the preferred option:

Figure 1: Approach to Business Case Development



As per the outcomes of the Business Case, the expansion option was identified as the preferred option to process excess SSO using anaerobic digestion, capable of generating renewable natural gas ("RNG"), at the existing site.

Through expansion, The City will create a long-term solution for organics processing that aligns with The City's environmental and sustainability goals as well as the waste management strategies while still providing value for money for ratepayers.

### **Market Sounding**

As per feedback from seven (7) private sector waste processing organizations/companies, the following high-level lessons were derived from the market sounding with respect to the potential outsourcing option:

- There is insufficient capacity in the regional Calgary market to accommodate processing the excess material that The City is currently collecting. Market sounding participants suggested that The City could outsource between 10,000 to 20,000 tonnes per year immediately with multiple providers, however these providers would be outside of City limits. This would require additional logistics to transport materials to the providers' facilities or alternatively, a new transfer station could be built within City limits to facilitate waste collection and distribution to processors outside of The City. This information was sourced from market sounding participants and was not further verified for accuracy.
- Market players cited interest in expanding or building facilities to accommodate The City's excess SSO. The City could anticipate construction completion over the next one (1) to three (3) years on multiple facilities, however, available capacity at these sites may be limited in the near term due to existing/established contracts. The financial model reflects a conservative estimate for the construction period (i.e., three (3) years) in alignment with this feedback.
- ► To more quickly respond to current demand, other municipalities have engaged with and contracted organic materials out to multiple private sector organizations while their facility is being built or expanded.

# **Strategic Case Assessment**

The extent to which each option aligns with both regional policies and The City's broader policy goals were explored to support investment decision making. The strategic case assessment was based on a review of the following City of Calgary strategic policies and plans:

- 2020 Municipal Development Plan ("MDP")
- Climate Resilience Strategy
- Calgary in the New Economy Strategy
- Resilient Calgary Strategy

- Social Wellbeing Policy
- Rethink to Thrive Strategy
- Economic Resilience Task Force

In assessing option 2A and 2B against strategic plans and policies, it was noted that there was no significant difference between the outsourcing options. Overall, both the expansion and outsourcing options provide a high degree of alignment with The City's strategic policies and plans.

# **Economic Case Assessment**

The Economic Case Assessment was undertaken to identify the option that best delivers public value to society, including wider, economic, social, and environmental effects. In undertaking this assessment, EY conducted a Cost Benefit Analysis ("CBA") of each of the options. The options were assessed across five (5) benefit accounts: Government Financial Account, Resident Consumer Account, Economic Development Account, Environmental Account and Social Account.

The figure below provides an overview of the outputs of the CBA. The Government Financial Account was assessed quantitatively as well as qualitatively, whilst the remaining accounts were assessed qualitatively based on publicly available information. From a qualitative perspective, expansion (option 1) performed the strongest overall, outperforming outsourcing across all accounts, with the exception of the Economic Development Account where it performed similarly to the outsourcing with AD option (option 2B).

#### Figure 2: CBA Outputs Summary



From a quantitative perspective, option 1 (expansion) presents a lower economic cost to The City (\$87m - \$103m) relative to option 2A (\$111m - \$134m) and option 2B (\$127m - \$153m). This is primarily due to potential revenue unlocked for The City from sale of RNG under the expansion option and higher operational efficiency.

Key Quantitative Inputs and Outputs of the Government Financial Account (in \$millions)					
Costs (\$ NPV)	Option 1- Expansion	Option 2A - Outsourcing with Composting	Option 2B - Outsourcing with AD		
Operating Costs	(\$51 - \$67)	(\$44 - \$58)	(\$71 - \$93)		
Financing Costs	(\$26 - \$33)	(\$28 - \$37)	(\$34 - \$44)		
Capital Costs	(\$38 - \$40)	(\$40 - \$42)	(\$48 - \$51)		
Total Cost	(\$116 - \$140)	(\$113 - \$137)	(\$154- \$188)		
Benefits					
Revenue	\$29 - \$37	\$2 - \$3	\$27 - \$35		
Discount Rate	Percentage				
Social Discount Rate	6% - 8%				
Outputs	Net Present Value				
Net Benefit (Cost)	(\$87 - \$103)	(\$111 - \$134)	(\$127 - \$153)		

#### Table 1: Qualitative CBA Outputs

Investing in waste management is a public good and investing in the expansion of SSO processing capacity for The City will generate benefits for all members of society through enhanced environmental, economic, and societal outcomes.

### **Financial Case Assessment**

A separate quantitative assessment was undertaken on the two (2) options (expansion and outsourcing), which involved developing the key assumptions underlying the analysis (including underlying costs, financial and economic assumptions, etc.).

The preliminary financial results were determined by estimating the net present value ("NPV") for each of the Project options. NPV considers the cash flows of the individual Project options as well as the timing of those cash flows, thereby recognizing the "time value of money". Future cash-flows (such as operating costs and loan repayments) are more greatly "discounted" the further into the future the cash-flows occur. In order to carry out the financial analysis, a comprehensive profile of the costs under each option was compiled. A financial model was developed for each option (options 1, 2A and 2B) and reflects the unique cash flows for each.

A summary of the results for each of the Project options, and the resulting NPV, is provided in the table below. All values in the table are listed in NPV terms as per leading practice for a comparative financial analysis. Construction, operating and major maintenance costs and other inputs used in the calculations are detailed in Section 6. The preliminary financial results are based on key assumptions underlying the analysis. Sensitivity analyses have been undertaken to review the impact of changes to certain key assumptions (see Section 6.9).

Net Present Value – Financial Case Assessment - Summary Results					
Costs (\$m)	Option 1- Expansion	Option 2A - Outsourcing with Composting	Option 2B - Outsourcing with AD		
Operating Costs	(149.71)	(128.39)	(208.15)		
Financing Costs	(52.58)	(60.71)	(72.76)		
Capital Costs	(46.48)	(48.74)	(58.48)		
Net Project Costs	(248.78)	(237.84)	(339.40)		
Capital Funding Sources	46.48	48.83	58.48		
Revenue	56.41	4.15	53.85		
Total Project Costs*	(145.88)	(184.86)	(227.06)		
Difference to Option 1		(38.98)	(81.17)		
NPV Rate per Tonne (60,000 tonnes)	(97.26)	(123.24)	(151.37)		

#### Table 2: Summary of Financial Case Assessment Outputs

\* Table values may not add precisely to the totals due to rounding.

Based on the financial analysis results, the expansion of the existing facility (Option 1) is expected to deliver better value to The City. Expected savings for expansion are 21%, or \$38.98m (NPV), compared to option 2A (outsourcing with composting) and 36%, or \$81.17m (NPV), compared to option 2B (outsourcing with AD).

### **Deliverability and Operations Case Assessment**

The deliverability and operations case qualitatively assessed the two (2) options (option 2 includes two (2) suboptions, as described above) against factors and risks related to delivery and operations from The City's perspective. Risks were identified and adapted from information provided by The City, industry templates and projects of a similar size, scope, or asset class. Each risk was qualitatively assessed to determine the likelihood of the identified risks occurring and potential impact of these events, should they occur. In conducting the risk assessment, it was noted that the risk to The City under the outsourcing options would not vary based on the selection of option 2A (outsourcing with composting) or 2B (outsourcing with AD).

Based on the results of the qualitative risk assessment in the table below, the expansion option provides a marginally lower risk amongst the Project options, with fewer high impact risks, however both options have similar risk profiles.

Table 3: Summary of Deliverability and Operations Qualitative Risk Assessment
-------------------------------------------------------------------------------

Qualitative Risk	Option 1 Expansion		Option 2 Outsourcing	
Risk	Prob Impact		Prob	Impact
Strategic Risks	Low	Medium	Low	High
Permitting	Low	Low	Low	Medium
Design and Construction Risks	Low	Medium	Low	Low
Operational Risks	Medium	Medium	Medium	Medium
Technology Related Risks	Medium	Medium	Low	Medium
Other Risks	Low	Low	Medium	Medium

# **Preferred Option**

Based on the outcomes of the above-noted assessments, the expansion option has been identified as the optimal option for The City to process excess SSO material. As per feedback from market participants, the private sector in the regional Calgary market is unable to process the 60,000 tonnes required by The City with their existing facilities. With The City's forecasts for SSO processing amounts increasing over time, the expansion option provides an opportunity for The City to create and maintain control over additional processing capacity.

In terms of the strategic fit of expansion, the assessment indicates that option 1 (expansion) provides a high degree of alignment with The City's strategic policies and plans. The economic benefit of expansion is also assessed as superior to outsourcing opportunities across a range of accounts.

On a financial basis, the expansion option requires a higher upfront investment by The City when compared to the outsourcing options, but it delivers better value to The City over the long-term. Under option 2 (outsourcing), the private sector finances the construction of a new facility and The City only incurs an operating cost, thereby reducing the upfront investment from The City.

Based on the results of the analyses, the most significant differentiator in the assessment was the higher potential for revenue from the sale of renewable natural gas ("RNG") under the expansion option as compared to the outsourcing option 2A (outsourcing with composting), as well as the capital costs of building both a transfer station and processing facility. The most significant cost difference for option 2B (outsourcing with AD) is the additional annual operating cost to process digestate compost following AD.

Overall, the assessments conducted indicate that a facility expansion is a better strategic, economic, and financial fit for The City and will drive better value for The City.

# 1 Introduction

Ernst & Young Orenda Corporate Finance Inc. ("EY") was retained by the City of Calgary ("The City") to undertake a business case assessment of the proposed options for the Calgary Composting Facility Expansion project (the "Project"). This business case (the "Business Case" or the "Report") documents the evaluation and comparison of the two (2) identified options under consideration based on industry best practices in investment analysis and cost benefit assessment:

- Expansion of the current facility to process excess capacity; or
- Outsourcing processing of excess capacity to the private sector.

The Report aims to assist a reader in understanding the benefits, costs and considerations of both options and identifies the preferred option for The City to manage its excess organics.

The existing Calgary Composting facility was developed under a public-private partnership ("P3") agreement. The scope of this agreement included a 10-year operations, maintenance, and rehabilitation contract. The information, assumptions and analyses in this Business Case were developed on a standalone basis. It is understood that there could be opportunities for future synergies with the P3 agreement. These synergies are currently unknown and could be further considered post-decision and during negotiations.

# **1.1 Background and Context**

The City introduced the 'Green Cart Food and Yard Waste program' in July 2017 in order to divert organic material from the landfill as a critical step to achieve Council's target of 70% waste diversion by 2025. The program began operations in 2017 to collect food and yard waste from single-family residential homes and process the organics at a City-owned composting facility located at the Shepard Waste Management Facility.

The City's Municipal Development Plan ("MDP") is a strategic policy document that guides Calgary's growth and city building. Sustainability has always been a part of The City's planning. The Project will contribute to realizing these objectives, including but not limited to the following: Figure 3: Aerial View of City of Calgary Composting Facility, Indoor and Outdoor Storaae



- The City will continue to enable Calgarians to manage their waste responsibly, with a focus on reduction, reuse, and diversion (recycling and composting).
- Reduce waste and improve waste management and resource recovery.

In advance of rolling out the program, The City developed a Composting Facility to process food and yard waste through a 10-year P3 agreement with a consortium of companies with experience in the design, construction, and

operation of composting facilities. The open procurement resulted in a facility capable of processing 100,000 tonnes per year of food and yard waste and 45,500 tonnes per year of biosolids.

The single-family residential green cart program in Calgary has been extremely successful since launching in 2017. The program has received tremendous support from residents as the collected material has exceeded forecasted tonnages since the early onset of the program. This in turn has exceeded the capacity of the Composting Facility and has developed the need to gain additional food and yard waste process capacity to continue diverting organic waste from landfills. As shown in the table below, The City has exceeded capacity at the Composting Facility in 2018 to process food and yard waste defined as Source-Separated Organics ("SSO").



Figure 4: Calgary Composting Facility - Green Cart Receiving Area

Table 4: The City's SSO Tonnage Volumes (Forecasted and Actuals)

Forecasted and actual SSO tonnage amounts per year					
Year	2017	2018	2019	2020	2021
Forecasted Volume (tonnes)	25,700	86,900	88,300	89,500	90,700
Received Volume (tonnes)	37,700	112,500	121,900	133,000	-

The City is seeking to determine how to best manage these expanded amounts. The forecasted SSO tonnage in excess of the existing capacity of 100,000 tonnes per year (as estimated by The City) is shown in the table below.

#### Table 5: Forecast for Future Excess SSO Tonnage Volumes

Six (6) year forecast for excess SSO tonnage volumes per year						
Year	2022	2023	2024	2025	2026	2027
Forecasted Volume (tonnes)	28,000	30,000	32,000	43,000	46,000	49,000

In March 2020, The City issued a Request for Information ("RFI") to market to determine if there were new technologies available in the market that could be used to gain capacity at the Composting Facility. Jacobs Engineering Group Inc. ("Jacobs") was retained to assist The City to review and evaluate the responses against a pass/fail criteria analysis. Five (5) alternatives passed the analysis, which resulted in Jacobs developing conceptual designs of each to illustrate how they could be integrated into the Composting Facility. These options were further evaluated through the *Value Management Study* conducted in 2020 to identify and evaluate the most suitable process technology option. As part of the Study, a Class 4 capital and operations & maintenance cost estimate was developed for each of the 5 options. Industry experts in the fields of indoor / outdoor composting and anaerobic digestion ("AD") and City staff reviewed the alternatives, proposed improvements and cost savings to each

alternative, and determined which alternative provided the most value to The City based on a performance / cost calculation of each alternative. The Value Management Study determined that horizontal plug flow anaerobic digestion was the preferred technology for the expansion option.

For further due diligence, The City evaluated the expansion option against a second option of contracting with the private market to process excess capacity.

# **1.2 Project Options**

Following the Value Management Study, this Business Case provides an analysis and comparison of the two (2) identified options based on strategic alignment to The City's policies, economic benefits, financial assessment, and the deliverability and operability of each option.

The two (2) options The City is considering in order to solve the capacity constraints are defined as follows:

- Option 1 Expansion: Under this option, The City would expand the existing Composting Facility located at the Shepard Waste Management Facility, to be able to process the excess amount of material up to an additional 60,000 tonnes per year. Under this option, The City expects to use AD technology that will be owned by The City and initially operated by the current private sector partner, AIM Environmental Group.
- Option 2 Outsourcing: Outsource material in excess of original design capacity of the existing facility (i.e., over 100,000 tonnes) to private facility operators that can process the additional organics material. The outsourcing option assumes the facility is capable of processing 60,000 tonnes per year. This option is further broken down into two (2) alternative solutions.
  - Option 2A (outsourcing with composting): Outsource material to a private processing facility that will generate compost from all organic waste. The proposed processing facility is anticipated to be located outside of City limits, therefore requiring a transfer station within The City, and hauling of materials from the transfer station to the processing facility.
  - Option 2B (outsourcing with AD): Outsource to a private processing facility that will process materials using AD technology, which is aligned with The City's intended approach as defined in Option 1. The processing facility is anticipated to be located within City bounds, eliminating the need for a transfer station, and transporting materials.

### **1.3 Approach and Methodology**

The development of the Business Case is foundational for The City to determine its best option and will set a clear direction for how to manage the excess material collected. EY's methodology for the development of the Business Case is provided in the figure below:

#### Figure 5: Business Case Methodology



#### 1.3.1 Project Initiation and Research

A kickoff meeting was held with members of The City's Project team on May 12, 2021. The objectives of this session were as follows:

- ▶ To address the current status of the Project and understand work carried out to date; and
- ▶ To discuss EY's proposed work plan, refine, and agree on scope and timing given the status of the Project.

In this phase of the Project, The City provided relevant documentation, which was reviewed by the EY Team. EY undertook a review of the available information and used The City's and the Consultant Engineer's work to date and data on the Project (as applicable).

In assessing the provided information and assessing the viability of the two (2) options, EY conducted a market sounding of private sector processing capacity and rates, and a jurisdictional review of transactions regarding contracting excess material.

#### Jurisdictional review

The objectives of the jurisdictional review were to identify other municipalities that have an agreement in place with private sector for excess waste. Where possible, EY conducted a review of available agreements with private contractors and sought some rationale as to why jurisdictions might select expansion over outsourcing options (or vice versa).

The intention of the jurisdictional review was to identify criteria or factors for the selection of preferred options in comparable jurisdiction, and to source potential lessons learned which may be applicable to The City in the future.

Further details on the jurisdictional review approach and key findings are provided in Section 2 of this Business Case.

#### **Market Sounding**

The market sounding process was undertaken to source information and assess the capability and appetite of the market to meet The City's processing needs through private sector processing capacity. EY conducted a series of interviews with identified market sector participants with the following objectives:

- Identify current processing capacity, current tonnage processed and processing rates in The City and regional areas; and
- Assess viability of processing additional tonnage to meet the future demands of Calgary.

Further details on the market sounding approach and key findings are provided in Section 3 of this Business Case.

#### 1.3.2 Options Development

The EY Team confirmed the definition of the two (2) options under consideration based on further review of inputs and information from The City, and feedback obtained from market soundings and jurisdictional review.

In developing the options, the EY Team confirmed The City's assumptions and other considerations required for the analyses, including identifying potential limitations related to assessment of the two (2) options.

#### 1.3.3 Options Analysis

In developing the Business Case, the EY Team undertook four (4) different analyses to determine a preferred option and recommendations with respect to The City's need to process excess capacity. The two (2) options under consideration were comparatively assessed to determine the most viable and effective option in alignment with The City's goals and objectives.

The following subsections provide an overview of the analyses undertaken to develop the Business Case, including:

 Table 6: Analyses Undertaken in Completing the Business Case

Business Case Options Analyses	
	<ul> <li>Assessed the alignment of each option with The City's identified objectives, strategies and policies related to the Project</li> </ul>
	Review of municipal plans, strategic plans and policies that were noted as applicable
Strategic Case Assessment	<ul> <li>Assessment of how each option aligns with The City's strategies, goals, and objectives</li> </ul>
	<ul> <li>Identification of potential qualitative and quantitative benefits (where applicable) that support The City's strategies, goals, and objectives</li> </ul>
1	<ul> <li>Further details on the strategic case assessment approach and outcomes are provided in Section 4 of this Business Case.</li> </ul>
•	<ul> <li>Identified and assessed qualitative and quantitative socio-economic benefits for each option</li> </ul>
Economic Casa Accordment	Assess the degree of socio-economic benefits including but not limited to employment, environmental, greenhouse gases, transportation, and local usage
Economic Case Assessment	Identify each benefit to assess its value for each option
	<ul> <li>Compare the Net Present Value ("NPV") of Project Cost and Benefits to determine ratio for each option (where appropriate)</li> </ul>
	<ul> <li>Further details on the economic case assessment approach and outcomes are provided in Section 5 of this Business Case.</li> </ul>
	EY developed the financial model aligned with other complex waste sector infrastructure projects, reflecting best practices for structure and transparency, and having been previously independently reviewed.
	The model was tailored to reflect the requirements of this Business Case which included capital, financing, operations, and maintenance assumptions for both options, along with the variability in material quantity, gas generations amounts, gas revenue amounts, and third-party tipping fees assumptions.
Financial Case Assessment	Inputs for the financial model were developed based on cost estimate information developed by Jacobs and other documents identified by The City. Additional information used in conducting the assessment was based on findings from the market sounding and jurisdictional review. The information sourced during market sounding interviews was not verified for accuracy.
	The financial model also incorporated scenarios to test sensitivity analysis related to aspects such as SSO processing amounts, the location of the private processing facility, financing rates and other variable elements.
	Inputs and assumptions used in the model were validated with The City's Project team and developed in alignment with market feedback received during the market sounding sessions and EY's experience on precedent projects.
	In addition, another factor of this assessment included a qualitative risk assessment to identify potential risks related to Project development and delivery. The assessment included consideration of the potential likelihood and impact on The City, should the risk occur.

Business Case Options Analyses	
	Further details on the financial case assessment approach and outcomes are provided in Section 6 of this Business Case.
Deliverability and Operations Case Assessment	EY conducted a qualitative analysis of factors and considerations aligned with the deliverability and operations of each of the two (2) options under consideration.
	Each of the options were assessed based on their respective alignment with the identified criteria (i.e., deliverability and operations factors).
	The outcomes of this assessment highlight the option which provides The City with the greatest operational flexibility, while considering factors related to Project development and delivery.
	Further details on the qualitative deliverability and operations approach and outcomes are provided in Section 7 of this Business Case.

# **1.4 Objectives of the Business Case**

This Business Case provides an overview of the assessment of both potential options for consideration related to processing excess SSO capacity in The City. The collective outputs of the assessments were comparatively assessed to identify the preferred option in alignment with The City's needs, objectives, and future goals.

# **1.5 Limitations of the Business Case**

In developing the Business Case, the EY Team conducted reviews, analyses, market sounding interviews, and financial modelling. The City provided relevant documentation, which was used by the EY Team. EY also undertook research based on publicly available information. The feedback sourced from market soundings and publicly available information and findings resulting of the jurisdictional review were not further validated for accuracy. The findings presented in this Business Case represent the information available at the time of submission to The City and may be subject to change based on updated information.
# 2. Jurisdictional Review

The purpose of this section of the Business Case is to summarize the jurisdictions or municipalities with contractual agreements in place with the private sector for the processing of residential organic waste. EY conducted a jurisdictional review to provide The City with a better understanding of the rationale and information used to determine if outsourcing was selected as a solution in other jurisdictions. The following subsections provide an overview of the jurisdictions included in this review, and key findings resulting from a review of publicly available information.

# **2.1 Selection of Jurisdictions**

A total of 17 jurisdictions (Appendix A: Long-List of Jurisdictions Reviewed) were selected and reviewed to source high level information and lessons learned associated with decision making related to excess capacity. Five (5) jurisdictions were selected for a detailed review, including:

Table 7: Description	of Jurisdictions	included i	n Review
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Jurisdiction	Description and Rationale for Selection
	The City of Airdrie was included in the jurisdictional review due to its close geographical proximity to The City and its use of outsourcing to process SSO with local private sector partners.
Airdrie, Alberta	▶ The City of Airdrie introduced their curbside green cart program in early 2014 upon successful completion of a pilot project. The collection and processing of organic waste was outsourced in early 2014 for a five (5) year term. Upon contract expiration, a new contract was re-tendered with a five (5) year term. In both occasions, GFL Environment Inc. was selected as the preferred service provider. As part of both contracts, it is the responsibility of the service provider to select an approved processing facility.
	The City of Ottawa represents an example of a public entity issuing a competitive Request for Proposal ("RFP") process for the development of a new privately owned facility to meet demands.
	In 2007, the City of Ottawa approached the private sector to provide solutions to address the implementation of a city-wide organics waste collection. A competitive procurement was issued to process up to 100,000 tonnes per year of SSO.
Ottawa, Ontario	By 2008, the City of Ottawa achieved its goal to divert 60% of residential waste from landfills through the introduction of processing organic waste and fulfill their commitment in order to receive an \$8.5 million grant from the Federation of Canadian Municipalities Green Municipal Enabling Fund which supports SSO program implementation.
	An outsourcing approach was selected due to the dynamic nature of the waste industry and the emergence of new processing technologies which were considered to benefit Ottawa's overall waste management strategy.
	The service agreement was awarded to Orgaworld (now known as Convertus) in early 2008 and construction of a new composting facility began in April 2009. This agreement has a term of 20-years and stipulates providing 80,000 tonnes of organics per year on a put or pay basis.

Jurisdiction	Description and Rationale for Selection
	The contractual relationship has been publicly questioned due to contract requirements which include annual 'put-or-pay' thresholds.
	The Regional District of Nanaimo was included in the jurisdictional review as it represents a municipality in a neighbouring Western Canada province, and is an example of sole sourced outsourcing to process SSO.
	The district has historically required capacity for 15,000 – 20,000 tonnes of organic materials each year. It is anticipated that the addition of four in-vessel composting tunnels and odour abatement technologies will increase processing capacity up to 40,000 tonnes per year.
Regional District of Nanaimo, British Columbia	In 2018, the district awarded Circular Waste British Columbia Inc. (now known as Convertus) a 20-year contract with a planned plant expansion and upgrade to increase the facility size and processing quality to support up to 90% diversion from landfill.
	Processing was outsourced in Nanaimo to leverage the capacity, experience, and expertise of the private sector. A long-term contract was awarded to ensure security and value for citizens.
	As part of the agreement, any excess capacity at the facility can be fulfilled by accepting organic waste from surrounding municipalities to leverage economies of scale and reduce the burden on systems in other municipalities.
	The Region of Niagara represents a municipality that is currently in negotiations with a private sector processer to increase capacity to meet future SSO processing demands.
	The region introduced SSO collection in 2003 as part of a green bin program which collects food waste and, leaf and yard material. Since 2009, Walker Environmental Group has processed the organics under a contract over a 20-year term scheduled to expire on March 31, 2029.
Region of Niagara, Ontario	The agreement includes a minimum commitment of 29,700 tonnes to a maximum of 39,700 tonnes per year of which 5,700 must be bulking material as the facility is capable of processing 34,000 tonnes.
	The Region of Niagara is currently assessing its future capacity as they are forecasting 42,000 tonnes per year beginning in 2021. This assessment includes the review of the possible options to procure additional capacity at an alternate facility, build its own processing facility, or enter into negotiations with Walker Environmental Group to expand their processing facility.
	On April 13, 2021, the Public Works Committee approved the recommendation to enter into negotiations with Walker Environmental Group for the expansion of the Walker facility.
	The City of Toronto operates two city-owned organics processing facilities with private operators: Disco Road Organics Processing Facility and Dufferin Organics Processing Facility processing 75,000 and 55,000 tonnes per year, respectively through anaerobic digestion.
Toronto, Ontario	► The City of Toronto also contracts out approximately 45,000 tonnes per year of organic waste to private processors. Most recently (February 2021) an RFP to process up to 45,000 tonnes per year (through two separate suppliers) was issued to the market for a three-year term with a possible one-year extension to replace expiring contracts. This contract is anticipated to support the City of Toronto with processing excess materials until a new city-owned facility is completed (\$141 million estimated capital expenditure with commissioning anticipated in 2028).

For each of above noted jurisdictions, a comprehensive review was conducted, including

- Strategic planning and decision making;
- Procurement model; and
- Service agreement model (where available).

The following sections provide an overview of key themes, considerations, lessons learned and key findings. The findings were based on publicly available information sourced in the desktop review.

### 2.2 Summary of Key Findings

The following subsections highlight key findings resulting from the desktop review and research on the shortlisted jurisdictions.

#### 2.2.1 Strategic Planning and Decision Making

While reviewing jurisdictions, a mix of priorities and challenges were identified. Examples of the priorities and challenges related to strategic planning and decision making are detailed below for the municipalities of Ottawa, Niagara and Toronto.

#### City of Ottawa

The City of Ottawa entered into agreement with Convertus (formerly known as Orgaworld) in 2008 to build a privately-owned facility and process up to 100,000 tonnes per year of organic waste with a commitment to supply a minimum of 80,000 tonnes per year for a 20-year term. The recommendation to conduct a competitive procurement was founded on the following considerations and based on their overall waste management strategy which was brought forward to Council on March 15, 2007:

- Implementation of a suite of waste management approaches to ensure ability to meet the growing demands of the city and decrease landfill capacity.
- Emergence of new technologies for alternative solid waste management methods, waste reduction, energy from waste, and mixed waste processing technologies.
- The requirements for the Federation of Canadian Municipalities Green Municipal Enabling Fund (\$8.5 million) that required a commitment to a citywide organics program by May 30, 2007.
- ▶ Divert 60% of residential waste by the end of 2008 from landfills to support their strategic goals.

City administration recommended proceeding with a competitive procurement for the implementation of an SSO program as it could meet the timelines for the grant and allow the market to present innovative solutions. An RFP was issued shortly after (March 2007) with the proposed facility being in service by April 2010.

In reporting from the City of Ottawa, it was indicated that there has been years of legal disputes between the City of Ottawa and Convertus related to processing of specific types of inputs (i.e., leaf and yard waste). In 2018, the City of Ottawa expanded its contract with Convertus. The renegotiated contract would end all ongoing legal action between the two (2) parties. It would also see the 80,000 tonnes "put-or-pay" provision, which the City considered unreasonable in review, reduced to 75,000 tonnes.

#### **Region of Niagara**

Region of Niagara staff recommended that the Region enter into negotiations with the current service provider, Walker Environmental Group, for the expansion of its current organic waste processing facility. This expansion was required as it is estimated that the Region of Niagara will be generating 42,000 tonnes of SSO per year by the end of 2021. This is an additional 8,000 tonnes of organic waste per year above the current capacity of the facility. The recommendation was supported by an analysis reviewing the following three (3) options to address the excess capacity:

- Procure additional capacity at an alternate facility: This option considered both the processing and hauling costs, along with the use of a transfer station as the facilities would be generally located outside the region. Through a market assessment of processing facilities, the price to process organics was found to be in the range of \$110 per tonne to \$130 per tonne. A haul rate was determined to be \$20 per tonne and the construction of a transfer facility would need to be added. The challenges of procuring additional capacity at a reasonable price was due to the low tonnage and processing facilities within a reasonable distance.
- Build own SSO processing facility: The Region of Niagara could build their own facility but would require roughly 2.5 to 3 years to receive approvals from the Ministry of Environment, Conservation and Parks, secure capital funding, and design and build a facility. Additionally, an operator would be required to process the material. A challenge identified for this option was the continued need to process of excess SSO during the time period required to build the facility.
- Negotiate with current provider to increase facility capacity: Negotiations with Walker Environmental Group would seek to determine a suitable arrangement to expand the existing facility to accept an additional 8,000 tonnes per year. Negotiations would be conducted on the basis of the 'Procurement By-Law No. 02-2016' that permits negotiations for the purpose of extending an existing contract when deemed more effective.

On April 13, 2021, the Region of Niagara Public Works Committee approved the authorization for staff to enter into negotiations with Walker Environmental Group. No anticipated timeline for the negotiation is publicly available at this time.

#### City of Toronto

The City of Toronto has two (2) organic processing facilities, located at Disco Road and Dufferin, that have the capacity to process 130,000 tonnes of organic waste per year. To compliment these two facilities, in February 2021, the City of Toronto issued public tenders to request additional services for processing up to 45,000 tonnes per year split into two (2) contracts. This limits the risk of private sector facilities not meeting environmental requirements if processing over capacity.

The City of Toronto has outsourced private sector processing to meet growing demands as it continues to advance its 'Long-Term Waste Management Strategy'. As part of this strategy, the City of Toronto has forecasted the need for a third anaerobic digestion facility similar to the Disco Road facility in 10 to 15 years that could process up to 75,000 tonnes per year. In order to meet the immediate demands, they elected to process the excess capacity using the private sector as there is currently insufficient quantity of organics to support investment in a City-owned facility.

#### 2.2.2 Procurement Process

There was limited publicly available information related to the procurement process for expansion or outsourcing to achieve additional processing capacity. Available information has been summarized for the City of Airdrie, Regional District of Nanaimo and City of Toronto.

#### City of Airdrie

In May 2014, the City of Airdrie introduced a curbside organic waste collection program to single-family residents. The organic waste collection program was introduced after the successful completion of a pilot project.

An RFP issued on December 20, 2013 requested interested parties submit a proposal to provide fully automated collection, hauling and processing services for city-owned curbside organic carts for a 5-year term and up to 10,000 tonnes per year. The RFP closed on February 18, 2014 and was awarded shortly thereafter to GFL Environment Inc.

The contractual agreement required the contractor to collect and transport all organic and residential yard waste to a processing facility that met all applicable and regulatory requirements in Alberta. The City of Airdrie issued a new RFP in 2019 to provide similar services for a five (5) year term that was awarded to GFL Environment Inc.

#### Table 8: Details of City of Airdrie Procurement Process

Details of City	y of Airdrie Procurement Process		
Procurement Phases	Request for Proposals to select preferred bidder		
	RFP Issuance: December 20, 2013		
Schedule	Response Deadline: January 15, 2014		
	Contract Award: February 18, 2014		
Scope of Services	To provide all necessary manpower, equipment and resources required to provide fully automated collection, hauling and processing services for City owned curbside organic carts set out by single family dwellings on a weekly and bi-weekly schedule (weekly basis from May to September and a bi-weekly basis from October to April).		
	Criteria	Weighting	
	<ul> <li>Conformance in meeting the primary objectives of RFP</li> </ul>	10%	
Evaluation Criteria	Proposed service levels	15%	
	Past performance, references and vendor reliability	10%	
	Total bid price to meet requirements	55%	
	Implementation and termination plan	10%	

#### **Regional District of Nanaimo**

The Regional District of Nanaimo released a Notice of Intent to Award Contract for the Organic Waste Processing Contract to Circular Waste British Columbia Inc. ("CWBC") on April 27, 2018. CWBC was a joint venture comprised of Convent Capital, Waste Treatment Technologies and Nanaimo Organic Waste. The award of a direct 20-year contract was the result of negotiations with the joint venture requesting a contract extension to meet the capacity demands and upgrade the facility at an estimated cost of \$3.5 million. The direct award was supported by the following reasons:

- Requirement for a contractor that has capacity, experience and expertise to accept and process at least 15,000 tonnes of organic material per year.
- Requirement for a contractor that is fully licensed and permitted by the Ministry of Environment and all applicable local authorities.

- Provision of storage and processing technology that is considered to be "best in class", including undertaking acceptance and processing of food waste in an air-controlled, odour mitigating environment.
- ▶ Increase organics diversion to meet the Solid Waste Management Plan's goal of 90% diversion.
- Need for a contractor that is uniquely positioned to meet requirements and will provide long-term security of services and represents good value and quality for taxpayers.

#### City of Toronto

The City of Toronto recently issued an RFP for organic waste processing to complement the existing processing capacity at two City of Toronto owned facilities. The RFP was issued to select two (2) suppliers that could each process 20,000 to 25,000 tonnes of organic waste per year. The contract issued was for a three (3) year term with the option to extend the agreement for one (1) year. The contracts were awarded to Cornerstone Renewables and StormFisher Environmental on May 5, 2021 to process 25,000 and 20,000 tonnes per year respectively. Service to process the organic waste begins in June 2021 with prior contracts expiring May 2021.

#### Table 9: Details of City of Toronto Procurement Process

Details of City	of Toronto Procurement Process		
Procurement Phases	Request for Proposals to select two (2) preferred bidders		
Schedule	RFP Issuance: February 1, 2021 Response Deadline: March 3, 2021 Contract Award: April 30, 2021		
Scope of Services	Organic material processing services for two contracts with two (2) separate suppliers for a total of up to 45,000 tonnes per year (20,000 and 25,000 tonnes per contract). The City will supply organic material, provide haulage services if each facility is located less than 161 km from Toronto.		
Evaluation Criteria	Criteria <ul> <li>Stage 1 – Mandatory Requirements</li> <li>Stage 2 – Evaluated Proposal Content</li> <li>Supplier profile</li> <li>Experience and qualification</li> <li>Proposed staff and team</li> <li>Proposed System/Solution</li> </ul>	Weighting Pass/Fail 6% 14% 5% 20%	
	<ul> <li>Work Plan and deliverable</li> <li>Circular Economy Company Profile</li> <li>Stage 3 – Cost of Services Pricing</li> </ul>	20% 15% 20%	

#### 2.2.3 Service Agreement Models

Contracts in the City of Toronto, the City of Ottawa, and the Regional District of Nanaimo are currently active. The contract length for the City of Toronto is three (3) years with the option to extend for one (1) year. The City of Ottawa and Regional District of Nanaimo have both issued 20-year contracts. The City of Airdrie is currently rerouting their organic materials to a GFL Environmental Inc. facility in the City of Calgary. The Region of Niagara is currently in negotiations to expand the Walker Environmental Group's facility. Key elements related to the City of Airdrie and the City of Toronto service agreements are highlighted in the following subsections.

#### City of Airdrie

The scope of work in the City of Airdrie's RFP (*RFP# R386-2013-KM; Fully Automated Curbside Organics Program for Collection, Hauling and Organics Processing Services - January 2014*) included providing all necessary manpower, equipment and resources required to provide fully automated collection, hauling and processing services for city-owned curbside organic carts set out by single family dwellings on a weekly and bi-weekly schedule (weekly basis from May to September and a bi-weekly basis from October to April). City of Airdrie Council reports reflect a positive sentiment regarding their organics program and the roll-out of the Cart Wizard program in 2018 and 2019.

Clauses included in the service agreement referenced an award of such contract shall not prevent the City of Airdrie from entering into an agreement with any other person or company for the collection, removal, and processing of organics accumulated at residential dwellings. There is a clause noting that equipment shall meet current safety and environmental regulations.

Historical waste weights for the first three (3) years were provided in metric tonnes ("MT") as follows:

- ▶ 2010: 6,985 MT
- ▶ 2011: 7,516 MT
- ▶ 2012: 8,288 MT

The following insurance requirements were included:

- Commercial General Liability (\$5 million to \$10 million)
- Owned Automobile Liability Insurance (\$2 million to \$5 million)
- "All-Risk" Property

The service agreement was awarded to GFL Environmental Inc. in 2014. This agreement included the requirement of organic processing, albeit the agreement did not stipulate the location of the facility. GFL Environment Inc. had selected Thorlakson Nature's Call as a partner for the processing of organics. Thorlakson Nature's Call had been forced to close the facility, as stipulated by Rocky View County, as they were operating without the appropriate permits in June 2019. Thorlakson Nature's Call was required to meet conditions that included air quality and odour assessment and install an air quality management system to address the odour and meet the requirements of the development permit. The deadline was January 31, 2019 which was not met but continued to operate without proper permitting until June 2019 when they were shutdown by the Rocky View County. The Alberta Environment and Parks Ministry has since issued a \$1.5 million penalty and is currently in litigations.

GFL Environmental Inc. has since shifted it organics processing at its owned facilities. Two (2) facilities in separate locations have been used for carrying out the contractually required processing; one (1) facility in Strathmore followed by one (1) in the City of Calgary. This change occurred in response to a decision to shut down GFL Environmental Inc.'s Strathmore location by Strathmore City Council. Hauling long distances has been voiced as a concern to the City of Airdrie due to fossil fuel consumption and associated emissions such as greenhouse gases ("GHGs"). Both the Thorlakson Nature's Call and the GFL Environmental Inc. facility in Strathmore have had challenges with meeting the provincial environmental regulations.

#### City of Toronto

The scope of work in the City of Toronto's RFP (*Part 2 – Form of Agreement, RFP No. Dec 2804646264*) included supplying organic material, providing haulage services if the facility is less than 161 km from Toronto, and payment terms for organic material processing services. The supplier is responsible for marketing the end product for 'beneficial use' which is a defined term in the RFP. There was a non-exclusivity clause stating that a supplier shall not be guaranteed exclusivity. Dispute resolution is outlined and includes the use of a 'Rectification Notice'. There is a section in the RFP providing information on the goals of the City of Toronto Social Procurement Program which have been developed to drive inclusive economic growth in Toronto.

The City of Toronto is responsible for the following:

- Removing organic material loads that are rejected by the supplier(s) once loaded onto a city transfer vehicle
- ▶ Paying the amount of \$0.22/km MT for the rejected whole or partial load
- > Operating, and maintaining the transfer stations' loading facilities
- ▶ Providing measured weight information using weigh scale records

The RFP specified that the facility must be enclosed and equipped with an odour control and treatment system to contain odours and prevent fugitive emissions. It is also required to treat collected odorous air to reduce odour concentration and enhance dispersion of treated air in order to prevent off-site odour impacts.

Details on the awarded tonnage (Minimum Annual Guarantee Tonnage) are as follows:

- Supplier 1: 25,000 (Performance Security (Letter of Credit Requirement): \$825,000); Average tonnes per day, 5 days per week: 100 (Variance +/- 35)
- Supplier 2: 20,000 (Performance Security (Letter of Credit Requirement): \$660,000); Average tonnes per day, 5 days per week: 80 (Variance +/- 35)

Note: The City of Toronto guarantees to supply a minimum of 70% of the above awarded tonnage.

The following insurance requirements were included:

- ► Commercial General Liability (\$5 million)
- ▶ Pollution legal liability insurance (\$2 million per occurrence)
- Automobile Liability Insurance (\$5 million)

Appendices of the service agreement included 'Transfer Station Information' and 'Photos of Typical Organic Material'.

## 2.3 Summary of Key Themes and Lessons Learned

The following sections highlight key themes and lessons learned resulting from the desktop review and research on the shortlisted jurisdictions.

#### 2.3.1 Strategic Planning and Decision Making

The majority of jurisdictions included in the detailed review have outsourced organic waste processing as an immediate solution to meet their waste management goals and requirements to receive funding approval as both capacity and infrastructure exist in their respective local markets. Municipalities such as the City of Toronto and Regional District of Nanaimo have access to established private sector waste processing infrastructure and market capacity, which impacted strategic planning and decision making related to outsourcing.

The timeline to meet the goals or qualify for grants has impacted the decision as outsourcing appears to be the timeliest approach to introducing an organic collection program when sufficient capacity is available locally. In some cases, the private sector has supported public sector owned facilities to meet the growing demands and divert organic waste from landfills.

#### 2.3.2 Procurement Process

Jurisdictions appear to have selected preferred procurement process by considering the availability of local organic processing services and market capacity. In some cases, jurisdictions have sole sourced the processing services as there is limited local processing capacity. The majority of jurisdictions appear to issue an RFP with general turnaround of two to three months for a response.

Jurisdictions have balanced the requirements and evaluation criteria with experience and the ability to meet environmental regulations as the reliability and performance of suppliers is evaluated. The organic processing industry has been challenged with meeting environmental regulations as facilities are stretched to overcapacity and generating excessive odour. Consideration to maximum tonnes per year and per month of organic waste processing should be included in procurement in order for suppliers to design facility to meet demands.

#### 2.3.3 Service Agreement Models

The majority of municipal service agreements available and reviewed as part of the detail review of the five (5) jurisdictions included supplier owned facilities, specified term lengths and a defined range of organic materials to be processed. A few facilities are currently in operation and one municipality is in active negotiations. Other contracts have since been extended. All service agreements were non-exclusive.

In the procurement documents, municipalities included minimum tonnage and average tonnes per day along with estimated variances. Hauling services costs were included in the agreement and were adjusted annually. Historical information related to nature and quantity of organic materials were provided.

#### 2.3.4 Lesson Learned

The jurisdictional review included a detailed review of five (5) jurisdictions that each selected a unique approach to outsourcing organic processing. The variation of approaches provides a better understanding of the risks and lessons learned that should be incorporated in the potential outsourcing option. The following high-level lessons were derived from the jurisdictional review for the procurement model with respect to the potential outsourcing option:

- The state of the regional market, including availability of established market participants (i.e., existing facilities), current processing capacity and potential private sector capacity expansion in the region should be considered when determining the preferred procurement model.
- Outsourcing organics is seen as an immediate solution to meeting the growing capacity demands if capacity is available. Consider the length of the agreement to reflect the degree of investment required from the private sector.
- Allowance for multiple agreements with multiple parties (two or more) to reduce the risk of over capacity to a supplier that may impact the environmental obligations.
- Allowance for market innovation for various technologies and outputs as to not limit the market on the various technologies currently used.
- Allowance to increase or decrease maximum and minimum processing capacity to allow for fluctuation in actual and forecasted organic waste tonnage.
- > Provide flexibility for changes in the allowable organic material to be processed.

The City of Calgary should consider the above noted factors and considerations if implementing the outsourcing option (option 2).

# 3. Market Sounding

The purpose of this section of the Business Case is to summarize the informal input received from companies in both the local and national waste and primarily organics market in response to the potential to outsource the processing of excess capacity of SSO collected by The City.

EY used the following approach to plan and execute the market sounding:

- 1. Identified, in collaboration with The City, an appropriate list of companies with sector experience. A total of eight (8) interviews were completed between May and August 2021 (see Appendix B for the list of participants).
- 2. Prepared a market sounding briefing document which provides Project background, an overview of the options under consideration, a timeline of the report to City Council, and interview questions. The document was circulated to participants prior to the interview.
- 3. Interviewed participants via video conference calls using the market sounding briefing document to ensure consistency. These meetings were attended by representatives of EY and the respective participant companies. Discussions lasted approximately 60 minutes each. EY asked follow-up questions as appropriate and participants were invited to provide additional input relevant to the Project.

## **3.1 Summary of Market Sounding Key Findings**

In general, market sounding participants indicated a strong interest in the Project and a potential partnership opportunity with The City, however, it was determined that there is limited capacity in the regional market, and no facility, or combination of facilities, are currently able to process the additional amount of organics The City is looking to process. As per feedback from market sounding participants, it was suggested there is approximately 10,000 to 20,000 tonnes of available annual processing capacity in the current market, however these providers would be outside of City limits. This would require additional logistics to transport materials to the providers' facilities or alternatively, a new transfer station could be built within City limits to facilitate waste collection and distribution to processors outside of The City. The estimate of current private sector market capacity was provided by market sounding participants and was not further verified. This finding has been applied throughout this Business Case as an assumption for the assessment of options

Further findings and feedback from market sounding participants are summarized as key themes in the table below.

Key Theme	Commentary	
Experience	There is varied large scale organics processing experience in the Alberta market. This experience ranges depending on the organization, however, several participants noted experience working with municipalities.	
	<ul> <li>Generally, regional market experience includes processing of co-mingled food and yard waste.</li> </ul>	
	There is interest from the market to pursue a contract with The City, and participants noted a range of contractual preferences related to contract length, capacity, terms, etc.	
Contract	Participants indicated a general preference for smaller processing contracts (e.g., 10,000 – 20,000 tonnes per year) over longer terms (i.e., five (5) years or longer). Providing a minimum guaranteed tonnage helps with financing.	

#### Table 10: Summary of Key Findings from Market Sounding Interviews

Key Theme	Commentary		
	A few participants noted they would be interested in a long-term contract with The City resulting in a new privately-owned and financed facility.		
	Preference for a performance-based contract as opposed to prescriptive one allows for innovation and opportunity to provide the best solution for both The City and the private sector.		
	Based on market sounding participant feedback, there is limited processing capacity available in the regional market. Those that are building facilities noted that there are already contracts in place and noted that they have limited ability to take on additional SSO.		
	Participants suggested that The City may consider the use of multiple contracts to meet the excess capacity processing requirements.		
	However, it was indicated that there was not sufficient capacity in the regional market to process the excess amounts The City is looking to process, in existing facilities.		
	Participants suggested that in order to increase market capacity, private sector investmen will likely be required (i.e., expansion or development of new facilities). This would apply to facilities not owned or operated by The City.	t	
Capacity	Two (2) participants are currently in the process of constructing new facilities (one pending financial close in June 2021 and the other anticipating construction completion by spring 2022). It is important to note that potential construction or expansion of private sector facilities are often tied to commitments or contracts, i.e., the additional capacity may already be committed to a specific party. In addition, if there is additional capacity at these new construction or expansion facilities, there may be an option with existing contracted parties to use the additional capacity.	¥	
	Most participants have been considering investment in the Alberta market which may increase capacity in local markets (e.g., Rocky View County, Canmore, Calgary, and Edmonton). As indicated above, private sector investment in the development or expansion of waste processing facilities is typically tied to established contracts or commitments, which may limit the capacity available to The City.		
	Participants highlighted the need to consider seasonality and other events (i.e., capacity in the market to process yard waste is different from the capacity to process other SSO materials) with respect to SSO amounts. Available market capacity might change depending on seasonality; however, this potential additional capacity is difficult to predict	۱ :.	
	Both the nature of and quantity of contamination (e.g., expected to be approximately 5% to 10%) are key considerations for the market.		
Contamination	Participants highlighted the importance of providing detailed contamination information in procurement documents. The contaminate that raised the most concern was glass.		
	There is potential for penalties or excess charges to be applied on contaminated feedstock.		
	Participants noted estimated processing rates ranging from \$55 to \$155 per tonne. These processing rates varied dependent on the size, experience and availability. They also varied based on the quantity of contamination.		
Rate	Tipping fees were anticipated to improve with longer term contracts and a committed minimum tonnage. A few participants noted that they would offer preferential tipping fee to The City with guaranteed tonnage.	s	
	One (1) participant is planning to begin construction of a new facility this year (2021) and provided a processing rate estimate of \$40 to \$50 per tonne and noted that there may be an additional fee for transportation if required (maximum \$20 per tonne). While the quoted processing rate appears low, this is an uncommitted rate and an outlier to other rates quoted, and therefore not included in the financial modelling.		

Key Theme	Commentary
Technology	There are a variety of technologies available in the market. Participants expressed a preference for flexibility in technology as opposed to a prescriptive technology for processing.
Regulations	<ul> <li>The market raised concerns regarding new environmental regulations (i.e., control of odours emanating from facilities) which have led to shutdowns in the Alberta market. Participants are anticipating changes from the Ministry of the Environment and Parks before the end of the year that may include more stringent regulations.</li> <li>The market is aware of municipal approvals, by-laws and zoning requirements.</li> </ul>
Transportation	Participants were open to different transportation options including hauling organics to their facility from The City's existing facility or building a transfer station within The City's boundaries. It was noted, however, that transfer costs would likely be built into suppliers per tonne price.
	Hauling fee estimates were consistently estimated at around \$20 per tonne.
	One (1) participant specifically noted that they are not interested in transporting organics, only processing.
	A few participants referenced their participation in the ongoing works of the 'Compost Council of Canada' (e.g., roll-out of compostable packaging).
Other	All participants anticipate growth in the market including expansion to include materials from the industrial, commercial, and institutional ("ICI") sector in addition to The City's current SSO.

Overall, participants were appreciative of the opportunity to contribute to the market sounding exercise and expressed interest in updates related to the Project following City Council's decision in December 2021. A few participants expressed they would be open to answering further questions from The City as the Project continues to progress. The majority of participants expressed interest in participating in a future competitive procurements for municipal contracts for either the expansion (as technology provider or operator) or the outsourcing option and suggested a minimum of six (6) to eight (8) weeks for an RFP response.

## **3.2 Summary of Market Sounding Lessons Learned**

Generally, market sounding participants expressed interest in potential partnerships with The City. The following high-level lessons were derived from the market sounding with respect to the potential outsourcing option:

- ► There is insufficient capacity in the regional Calgary market currently to accommodate processing of the excess amounts currently being collected by The City.
- Based on currently available information, there is insufficient capacity in the market to process forecasted excess capacity requirements of The City without construction of a new private facility
- Market sounding participants estimated that The City could outsource up to 20,000 tonnes per year immediately with multiple contracts with multiple providers. This estimate was not further verified for accuracy.
- ▶ There is market interest in expanding or building facilities to accommodate The City's excess SSO.
- The City could anticipate construction completion over the next one (1) to three (3) years on multiple facilities, however, available capacity at these sites may be limited in the near term due to existing/established contracts. The financial model reflects a conservative estimate for the construction period (i.e., three (3) years).
- To respond quicker to current demand, other municipalities have engaged with and contracted organizations while their facility is being built or expanded, if capacity is available.

- ▶ Participants articulated the importance of a circular economy which included:
  - Maximizing the useful life of resources;
  - Reducing reliance on non-renewable resources;
  - Reducing the carbon footprint and limiting environmental impacts;
  - Regenerating natural systems; and
  - ▶ Enhancing social outcomes and local economic development.

*Example: The City of Toronto's Green Bin program demonstrates their commitment to the circular economy through its investments in facilities, contracts and resident education that keep organic material out of landfill and convert it into nutrient-rich end products.* 

# 4. Strategic Case Assessment

The purpose of this section of the Business Case is to assess the extent to which each option supports The City's policy goals, strategies and planning documents as outlined in The City's Statement of Requirement ("SOR") and by The City's representatives. In articulating areas of alignment and misalignment, the Strategic Case will identify material benefits and costs under each option for further quantitative and qualitative assessment in the Economic Case.

EY used the following approach to assess how each option supports The City's goals:

- 1. Reviewed The City's Municipal Development Plan, strategic plans and policies.
- 2. Drafted high-level descriptions of The City's Municipal Development Plan, strategic plans and policies.
- 3. Identified benefits that support the municipality's strategies, goals and objectives.
- 4. Reviewed draft benefits during a workshop with The City and incorporated feedback (Note: The identified benefits are also used in Section 5).
- 5. Identified the document's alignment with each of the two (2) options.
- 6. Assessed how each option is supported by the municipality's strategies, goals and objectives.
- 7. Shared preliminary outputs with The City for review and commentary.
- 8. Incorporated The City's commentary into the Business Case.

### 4.1 Overview of Strategic Plans, Policies and Objectives

The following strategic documents were reviewed in conducting the strategic case assessment.

#### Table 11: Overview of Strategic Plans, Policies and Documents included in Strategic Case Assessment

Strategic Document / Policy	Description	
2020 Municipal Development Plan ("MDP")	The MDP is a strategic policy document that guides Calgary's growth and city-building. Sustainability is highlighted as a key objective for The City in the MDP. This document presents planning and development policy statements that align with current and future waste diversion targets for The City.	
Climate Resilience Strategy	<ul> <li>The Climate Resilience Strategy is a strategic document organized into three sections:</li> <li>The Climate Resilience Strategy provides the main direction for The City.</li> <li>The Climate Mitigation Action Plan identifies the role and actions of The City to reduce emissions and enable a low carbon economy. It includes five (5) themes: buildings and energy systems, land use and transportation, consumption and waste, natural infrastructure, and leadership.</li> <li>The Climate Adaptation Action Plan identifies risks and vulnerabilities and involves an iterative process of risk assessment. It includes five (5) themes: people, infrastructure, natural infrastructure, water management, and governance.</li> <li>These objectives tie directly to the outcomes of this Business Case, and the selection of the optimal option for processing excess capacity, including infrastructure development and waste management.</li> </ul>	

Strategic Document / Policy	Description
Calgary in the New Economy Strategy	The Calgary in the New Economy Strategy is a living document that sets direction and establishes priorities for The City, while evolving to adapt to changing times. It includes three (3) core values for consideration, options should be inclusive, entrepreneurial, and enhance community spirit, and three (3) principles for consideration in decision making (decisions are data driven, stakeholder led, and aspirational).
Resilient Calgary Strategy	<ul> <li>The Resilient Calgary Strategy explores the following four (4) pillars along with actions that highlight the collaborative interests of resilience work and goals:</li> <li>Pillar 1: The Future of Calgary's Economy</li> <li>Pillar 2: Inclusive Futures</li> <li>Pillar 3: The Future of Calgary's Natural Infrastructure</li> <li>Pillar 4: Future Ready Infrastructure</li> <li>These pillars are considered in order to assess the two (2) options.</li> </ul>
Social Wellbeing Policy	The Social Wellbeing Policy outlines policy statements and procedures for how The City's services can contribute to achieving quality of life and increased Civic Participation for all Calgarians. The two (2) options are assessed by their degree of alignment with selected relevant policies and procedures highlighted in this section.
Rethink to Thrive Strategy	The Rethink to Thrive Strategy provides focus to administration related matters and outlines how City of Calgary employees will work together to support the delivery of the City Manager goals and Council's direction. It includes four (4) objectives and five (5) strategies with corresponding actions which were considered in assessing the options.
Economic Resilience Task Force	The Economic Resilience Task Force ("ERTF") document provides recommendations and advice to the COVID-19 Corporate Governance Committee regarding assistance that The City could provide to mitigate the impacts COVID-19 has had on the economy and The City's finances. This strategic document was included in the review to assess the potential economic impacts of COVID-19 on the two (2) options. Effective August 1, 2020, the ERTF transitioned from short-term strategies related to COVID-19 to medium and long-term strategies to address broader resilience. This Project aligns with the
	ERTF goal of generating a pipeline of economic resilience and will require financial decision making for a long-term project.

# 4.2 Strategic Case Assessment Approach

This assessment was undertaken to summarize the degree of alignment to each identified option with The City's selected strategic policies, plans and objectives.

The degree of alignment was assessed on a scale of a high, medium or low with respect to each of the documents noted in Section 4.1.

#### Figure 6: Strategic Case Ranking Scale - Degree of Alignment

Yellow represents a high degree of alignment.

Dark Grey represents some/medium degree of alignment.

Light Grey represents low to no degree of alignment.

### 4.3 Option 1 Strategic Case Assessment

A summary of the strategic case assessment of the expansion option is provided in the table below. The expansion option was assessed in alignment with the strategic policies, plans and objectives of The City.

#### Table 12: Option 1 (Expansion) Strategic Case Assessment

Option 1 - Expansion: Strategic Case Assessment		
Document	Rank	Findings
Municipal Development Plan	High	<ul> <li>Option 1 supports The City's implementation of a food action plan.</li> <li>Expansion would attract/implement government funding as a City-owned asset.</li> <li>Ability to preserve open space, agricultural land, &amp; natural beauty as the expansion would be built on an existing site and would not require greenfield lands.</li> <li>The City is directly able to reduce waste and improve waste management and resource recovery.</li> </ul>
Climate Resilience Strategy & Action Plan	High	<ul> <li>Demonstrate The City's leadership in the construction, operations, and maintenance of City-owned buildings, facilities, and infrastructure, as The City would retain control over these aspects of the expansion facility.</li> <li>Waste reduction and waste management is a core service that The City is responsible for providing to citizens. Under Option 1, The City retains control over waste management, including control over facility operations and processing methods in alignment with emissions/energy systems targets.</li> </ul>

Option 1 - Expansion: Strategic Case Assessment		
Document	Rank	Findings
		Expansion aligns with The City's objectives to improve current fleet and/or facility by minimizing GHG emissions (see Corporate Energy Plan: 2016-2026). For example, The City may pursue a Canadian Clean Fuel Standards pathway in partnership with another business unit to offset their natural gas use through use of cleaner renewable natural gas ("RNG").
		Investment in anerobic digestion and production of RNG will help enhance energy resilience of The City and shift the economy towards a circular economy.
Calgary in the New Economy Strategy		Allows The City to embrace innovation and technology, and continue to diversify into high-growth sectors, including energy security and environmental sustainability. Investment in AD and production of RNG will help attract highly skilled labour and supporting businesses.
	Med	AD is a relatively new technology in Canada but with a high potential to create a renewable natural resource which will lower overall GHG emissions and potentially replace existing fossil fuel sources.
		Investment in City-owned infrastructure helps enhance economic prosperity by providing a reliable revenue stream and GHG reductions to The City.
		The City creates by-products such as renewable natural gas and high-quality compost for the local economy.
Resilient Calgary Strategy	Med	Alignment with The City's objective of intentional investment in infrastructure to support resilient technological advances, weather events, and chronic aging of assets. Investment in anerobic digestion and production of RNG will help enhance energy resilience of The City and shift the economy towards a circular economy.
		Investment in City-owned asset means additional capacity is secured for its residents, and there is no risk of The City being outbid in its pursuit of processing capacity in the private market. This serves to enhance the resilience of its waste management system.
Social Wellbeing Policy	High	The City will 'lead-by-example' by moving towards a circular economy, demonstrating its commitment to sustainable development and renewable energy sources. This would be supplemented with incremental educational benefits associated with the introduction of anerobic digestion technology to The City.
Rethink to Thrive Strategy		Expansion can enhance value for money to residents through more efficient processing of SSO and aligns with The City's objectives to deliver major capital projects.
	1 link	Ability to improve The City's reputation with respect to waste management and diversion programs. The expansion shows further commitment to the green cart program and alignment with its objectives.
	nign	Demonstrates The City's proactive planning to manage changes in demographics and citizen expectations, including increases to forecasted processing capacity needs.
		Alignment with The City's objective to increase their overall waste management capacity and to be better able to respond to decisions by other orders of government (both provincial and federal).

Option 1 - Expansion: Strategic Case Assessment				
Document	Rank	Findings		
Economic Resilience Task Force	Med	<ul> <li>The City would retain financial risk. The expansion would be financed entirely by The City or in part by other levels of government.</li> <li>The City's investment in the expansion may ensure better value from The City's assets and would support local job creation.</li> <li>Alignment with investment in infrastructure that supports 'green' goals such as reduction of greenhouse gas emissions.</li> </ul>		

Based on the review of the strategic plans, policies and objectives, the following potential benefits and costs have been identified with respect to the expansion option.

- Cost stability / volatility: expansion provides a degree of long-term cost stability under the current P3 contract and aligns with The City's longer term strategic and financial planning goals. Expansion is also better aligned because The City does not base investment decisions on project returns or profit metrics.
- **Reputational impact:** no service delivery disruption is anticipated. Investment in expansion may increase the cost of services to citizens.
- Job creation: opportunity to design, construct, maintain, and operate the facility and therefore creates local jobs.
- Revenue impact: create an additional revenue stream for The City (sale of RNG). Composting by-products would be sold; however, revenues are small in comparison to the sale of RNG (less than 10%) and would be retained by the facility operator as is the case in the current facility.
- Lack of redundancy: demand issue created should the facility be taken offline. The City would need to divert materials to the private sector and would likely pay a premium price.
- Downtime landfill diversion: materials diverted to landfill create adverse environmental outcomes for The City.
- Adverse amenity impacts: by increasing processing capacity, odour and noise impacts may also increase which impacts citizen amenity and quality of life.
- Renewable energy education: investment in anaerobic digestion creates an opportunity for The City to educate citizens on renewable energy, sustainable development and a circular economy.
- Energy resilience: opportunity to increase and diversify domestic energy production in The City through converting organic feedstocks to RNG
- GHG reduction: reduce carbon dioxide and methane emissions in the atmosphere through the generation and use of RNG. GHG is reduced as a result of waste diversion and the displacement of fossil natural gas.
- Circular economy support: helps to accelerate The City's move towards a circular economy by using RNG as a potential source of electricity, heat, and fuel. This in turn reduces The City's overall carbon footprint and enhances energy resilience.
- Air quality improvement: opportunity to reduce GHG as materials won't require transfer services and could consider replacement of diesel in transportation fleets with compressed natural gas.
- Agriculture sector support: transform feedstock into by-products such as renewable natural gas and high-quality compost for the local economy.

### 4.4 Option 2 Strategic Case Assessment

A summary of the strategic case assessment of the outsourcing option is provided in the table below. The outsourcing option was assessed in alignment with the strategic policies, plans and objectives of The City. The below findings are consistent between both option 2A (outsourcing with composting) and option 2B (outsourcing with AD). In some instances, option 2B may be slightly more favourable than option 2A based on the technology used.

#### Table 13: Option 2 (Outsourcing) Strategic Case Assessment

Option 2 - Outsourcing: Strategic Case Assessment				
Document	Rank	Findings		
Municipal Development Plan	Med	<ul> <li>Option 2 aligns with The City's goal to connect people, goods and services locally, regionally and globally by accessing a network of experienced waste management contractors.</li> <li>Supports potential tonnage variances associated with The City's 'Residential Green Cart Program'.</li> <li>Outsourcing will attract private sector investment in the local economy and could attract private sector development opportunities (i.e., development of expansion of private sector processing facilities). However, as indicated in market sounding discussions, some service providers may be located outside of the boundaries of The City, and potential development and investment may occur outside of The City.</li> </ul>		
Climate Resilience Strategy & Action Plan	High	<ul> <li>The City can demonstrate leadership by supporting local contractors and innovation by leveraging the private market to forward its resiliency agenda.</li> <li>The City could work with contractors to educate and support Calgarians to divert organic waste away from landfills (e.g., create a video of what happens after materials are collected and the by-products created).</li> <li>Engagement with the private market provides an opportunity to access innovative technologies not presently deployed by The City within its waste management system, thereby creating the potential for operational and cost efficiencies and knowledge transfer.</li> <li>The City could develop robust performance regimes in contract terms that ensure emissions are monitored and measured in alignment with The City's objectives.</li> </ul>		
Calgary in the New Economy Strategy	High	<ul> <li>Allows The City to establish relationships with innovative companies to help diversify high-growth sectors and become a leading business to business innovation hub.</li> <li>Allows for a fast response to adapt and expand facilities and/or contracts to support accelerated urbanization, as The City is a cost-effective location for any business from start-ups to multinational corporations.</li> </ul>		
Resilient Calgary Strategy	High	Option 2 allows for a more even operating budget from year-to-year for The City. Option 2 does not require an immediate upfront capital investment from The City and as such, annual payments are more consistent, increasing only for additional tonnage		

Option 2 - Outsourci	ng: Strateg	ic Case Assessment		
Document	Rank	k Findings		
		<ul> <li>amounts. It is noted that some of the capital costs borne by private sector in the outsourcing option would be included in processing fees charged to The City.</li> <li>Allows for potential improved service value and efficient delivery of major capital projects, along with potential risk transfer of design, construction, finance, operation and maintenance.</li> <li>Supports the growing prominence of a regional governance model by accessing capacity outside of The City (i.e., grow and attract business).</li> </ul>		
Social Wellbeing Policy	High	Through procurement, The City can ensure appropriate partnerships are established in alignment with the principles in this policy.		
Rethink to Thrive Strategy	Med	<ul> <li>Option 2 allows for a more even operating budget from year-to-year for The City. Option 2 does not require an upfront capital investment from The City and as such, annual payments are more consistent, increasing only for additional tonnage amounts. The private sector would invest the upfront costs for the development and construction of a transfer station and processing facility in order to manage The City's excess SSO.</li> <li>Allows The City to be a champion for business success and apply a business-friendly lens to planning and service delivery.</li> <li>Allows for The City to 'Rethink' service delivery through the exploration of outsourcing and to create a Calgary that is more resilient in the face of stresses and shocks.</li> </ul>		
Economic Resilience Task Force	High	<ul> <li>Any capital requirements under Option 2 would be financed by the private sector.</li> <li>Ability to use municipal procurement as a tool to support economic resilience and drive innovation in the market.</li> <li>The City could assess the extent to which City owned capital infrastructure is underperforming. Outsourcing may help unlock "idle" capital (that would not be applied to develop the expansion facility) to deliver additional benefits.</li> <li>Attract private sector investment and capitalize on opportunities to create jobs and provide infrastructure investment opportunities that support The City's 'green' goals.</li> </ul>		

Based on the review of the strategic plans, policies and objectives, the following potential benefits and costs have been identified with respect to the outsourcing option.

- Cost stability / volatility: third-party contractors may bid to win the contract creating value for money. Despite this, capital expenditure and the cost of capital are anticipated to be higher under the outsourcing option. It is also possible that processing rates may increase at the time of contract renewal which would ultimately result in increased cost of services to citizens.
- Reputational impact: investment in capital expansion by the private sector will be required which may increase the cost of services to citizens (e.g., new facility, transfer station, and/or hauling services). No service delivery disruption is anticipated. While The City does not have control over the operation of

the private sector facility, there is the potential for a negative reputational impact tied to the performance of the private sector operator, specifically related to potential noise or odour impacts to facility neighbours.

- Job creation: jobs to design, construct, maintain, and operate a new transfer facility, a new processing facility, and/or upgrades to an existing facility would be created. Further jobs are created to transfer and/or haul materials within and outside of The City.
- Added redundancy: helps build capacity within the region and builds greater redundancy. This would help reduce the risk of environmental outcomes and additional costs associated with dumping materials at landfills.
- Adverse amenity impacts: potential development of a transfer station on greenfield lands or a new facility that creates new amenity impacts (i.e., odour and noise).
- Innovation: the private sector proposed that they may be able to provide innovations not possible in The City's current facility, which may result in waste being processed more efficiently.
- Flexibility: opportunity to improve flexibility through a reduce term and commitment when compared to the existing P3 contract. However, there is limited appetite in the market for shorter term (1-2 year) contracts (i.e., greater than five years).
- Benefits may flow outside The City limit: opportunity cost associated with processing materials outside The City (i.e., job creation and investment in another municipality).
- **Transportation costs:** likely increased travel time which translates to higher overall GHG emissions.
- **Regulatory compliance breach:** failure to comply with regulatory standards may result in the closure of a private sector facility.

Note: All noted benefits and costs will be further addressed in the Economic Case Assessment (Section 5).

### 4.5 Summary of Strategic Case Assessment

The extent to which each option aligns with both regional policies and The City's broader policy goals were explored to support investment decision making. The table below provides a summary of the preliminary outcomes of the assessment.

Table 14: Summary of Comparative Strategic Case Assessment

Strategic Document / Policy	Option 1 - Expansion	Option 2 - Outsourcing
2020 Municipal Development Plan	High	Medium
Climate Resilience Strategy	High	High
Calgary in the New Economy Strategy	Medium	High
Resilient Calgary Strategy	Medium	High
Social Wellbeing Policy	High	High
Rethink to Thrive Strategy	High	Medium
Economic Resilience Task Force	Medium	High
Overall Alignment with Strategic / Policy Objectives	High	High

In conducting the strategic case assessment, it was noted that both outsourcing options (option 2A and option 2B) align with The City's strategic / policy objectives.

Overall, both the expansion and outsourcing options provide a high degree of alignment with The City's strategic policies and plans. **Option 2 (outsourcing)** aligns slightly more favourably with the policies and strategic plans selected.

- ▶ Option 1 (expansion) had a high degree of alignment with four (4) out of seven (7) of the documents.
- ▶ Option 2 (outsourcing) had a high degree of alignment with five (5) out of seven (7) of the documents.

# 5. Economic Case Assessment

The purpose of this section of the Business Case is to identify the option that best delivers public value to society, including wider social and environmental effects. In undertaking this assessment, EY conducted a Cost Benefit Analysis ("CBA") of each of the options.

## 5.1 Economic Case Assessment Approach

A CBA is a commonly used evaluation framework that examines the advantages and disadvantages of an investment or policy decision by assessing its costs and benefits from the perspective of society. This societal perspective is what differentiates a CBA from a purely financial analysis, which focusses on the net financial impact to The City's cash flows.

- + Benefits are positive outputs or consequences which are desired or for which individuals are willing to pay.
- Costs are negative inputs or consequences for which individuals would have to be compensated, including the consideration of alternate uses of required funds, often referred to as the opportunity cost.

A CBA aims to identify benefits and costs that could impact a decision, including opportunity costs incurred. A CBA is complex, involving converting (where possible) a project's costs and benefits into dollar terms (i.e., "monetized"). This can be difficult, as it looks to monetize both market values and non-market values (i.e., those values that are not transacted in the economy).

In an ideal world, where there are no limitations to **Figure** information available, and all costs and benefits would be presented in monetary terms. However, this is often not possible because there are significant challenges with obtaining the required information, along with time constraints. The benefits and costs from projects, such as this one, are often intangible, thereby making them difficult to measure in monetary terms.

This CBA presents both quantitative economic costs and benefits, and a qualitative discussion of other costs and benefits that could impact the conclusion of the analysis. Both were considered when forming a conclusion.

The next few sections outline an approach which was applied while conducting the assessment.



#### 5.1.1 Defining the Geographical Area of Assessment

It was important to define the geographic boundary from which to consider the costs and benefits. This is because the size and scope of costs and benefits that may arise from each of the options will vary depending on the lens (geographic boundary) applied.

It was determined that the costs and benefits assessed in this analysis will be those that pertain to residents receiving 'Green Cart' services from The City. It is understood that all residents within single family homes up to four (4) units inside the municipal boundaries of The City, as long as they are not part of an apartment or condominium complex, are entitled to these services. Therefore, the initial geographical boundary of this CBA was defined by the municipal boundaries of The City. This boundary was subsequently extended by 50 km to account for benefits and costs that may accrue to the private sector under an outsourcing solution. The rationale for the extension was that there would be a very small probability of a processing facility being built within city limits, and 49 km represents the one-way distance to the Strathmore and High River areas of Alberta, where key market sounding participants are based.

#### 5.1.2 Definition of Benefit Categories

It was determined that the most appropriate framework for this CBA was the Multiple Account Evaluation ("MAE") framework. The MAE framework is based on the Multiple Account Evaluation Guidelines developed by British Columbia's Crown Corporations Secretariat. The key reasons the MAE framework was applied are as follows:

- Its precedent use in the past CBA reports undertaken for The City, most notably in the recent 'Cost-Benefit Analysis of the Calgary 2026 Draft Hosting Plan Concept'.
- The flexibility to evaluate decisions across several factors using a mix of quantitative and qualitative considerations.
- The wide use of the MAE approach, including the recommendation for its use by several Canadian provinces. The Alberta government, for example, has detailed a guideline for applying the MAE framework to assist in the decision-making process for transportation planning projects.

The MAE framework maintains the essence of a standard CBA with a few key distinctions.

It explicitly includes costs and benefits that are quantified, as well as qualitative factors in its evaluation approach, recognizing that several factors cannot or may be difficult to quantify.

Even when impacts can be quantified, they are not aggregated or added across accounts. In the MAE framework the different evaluation categories are assessed as distinct accounts as grouping them together can misrepresent results and ignores the nuances within each account.

When using a MAE framework, a CBA does not produce a single conclusion, but rather a conclusion for each evaluation account. The way readers interpret and weigh the relative importance of the account outputs will be influenced by their values, interests, and beliefs.





The five (5) distinctive evaluation accounts have been used in our analysis. These accounts are presented in Figure 8 and are further defined in Table 15.

#### Table 15: Economic Case Evaluation Accounts

Account	Description
Government Financial Account	Assesses the net change in financial position for The City and reflects the net financial cost or benefit to its citizens.
Resident 'Consumer' Account	Assesses the benefits the residents of The City will derive and negative consequences they may suffer from each of the options.
Economic Development Account	Assesses the range of economic impacts occurring as a result of investment in each of the options.
Environmental Account	Assesses the environmental impacts associated with each of the options.
Social Account	Assesses the social impacts of investment in each of the options.

#### 5.1.3 Identification of Costs and Benefits

EY compiled a list of potential costs and benefits associated with each option based on a variety of background documents provided by The City and via the strategic case assessment process. This process relied on:

- ► The EY Team's global experience in undertaking CBA for a wide range of waste-related projects and other infrastructure projects across different asset classes.
- A review of The City's and the Consultant Engineer's work to date and data on the Project (as applicable).
- Outputs from the strategic case assessment developed as part of this Business Case (see Section 4 for further details).
- Collaborative discussions with The City.

The list of potential costs and benefits was refined through a collaborative workshop with The City on May 28, 2021, based on what was deemed relevant to The City's strategic objectives, and then sorted into what was quantifiable and what would be discussed qualitatively based on the data available.

#### 5.1.4 Approach to Quantitative Analysis

For costs and benefits that could be quantified, EY developed a 25-year forecast from 2021 to 2046, in line with the financial case forecast, and discounted values using a social discount rate ranging from 6% to 8% to calculate net present value ("NPV"). The social discount rates are typically higher than financial discount rates as it considers a broader range of social, environmental and economic opportunity costs. The social discount rates used for this engagement are based on the CBA undertaken for Calgary's Olympic Hosting Plan. Keeping in line with standard practice, the CBA projections do not account for inflation and are calculated in nominal dollars, and does not account for transfer payments, such as taxes and subsidies, as they represent a transfer of costs or benefits within the economy rather than net new costs and benefits.

#### 5.1.5 Approach to the Qualitative Analysis

To allow assessment of qualitative costs and benefits across options within each of the five (5) MAE accounts, EY developed a scoring metric to help determine the order of magnitude of a potential cost or benefit. The order of magnitude score of a cost or benefit was determined by (i) the scale of impact and (ii) the likelihood of impact. The matrix in the table below provides an overview of how qualitative options were assessed.

#### Table 16: Qualitative Scoring Framework

		Level of Impact		
		Low Impact	Medium Impact	High Impact
		Minimal shift in financial and operational performance or service levels	Shift in financial and operational performance or service levels	Significant shift in financial and operational performance or service levels
	Low Probability (< 25%)	Low	Low	Low
Likelihood of Impact	Medium Probability (25% to 75%)	Low	Medium	Medium
	High Probability ( > 75% )	Low	Medium	High

Low Impact, Medium Impact and High Impact were scored as 1, 2 and 3 respectively for economic benefits, and -1, -2 and -3 respectively for economic costs. Low Probability, Medium Probability and High Probability were scored as 1, 2 and 3 respectively. The Level of Impact score and Likelihood of Impact score were then multiplied for the total score for each economic benefit or economic cost, within a range of -9 and 9. Scores within this range were categorized as follows:

#### Table 17: Level of Impact Scoring Rubric

Total Score	
-7 to -9	High Cost
-4 to -6	Medium Cost
-1 to -3	Low Cost
1 to 3	Low Benefit
4 to 6	Medium Benefit
7 to 9	High Benefit

For example, an economic benefit of high impact (score of 3) but low probability (score of 1) would be deemed to be a low economic benefit ( $3 \times 1 = 3$ ). An economic cost of high impact (-3) and medium probability (2) would be deemed to be a medium economic cost (- $3 \times 2 = -6$ ). The net score of an option under each MAE Account is developed by taking the average score of all economic benefits and costs. While this data cannot be quantified due to limited data, it provides The City with directional and order of magnitude impact for the purposes of investment decision making.

Analysis presented in the following section represent the outputs of EY's quantitative analysis and qualitative analysis based on prior work undertaken by The City, stakeholder analysis, market soundings, and EY's internal experience.

### 5.2 Economic Case Assessment

The figure below provides an overview of the outputs of the CBA. The Government Financial Account was assessed quantitatively as well as qualitatively, whilst the remaining accounts were assessed qualitatively due to data limitations.

#### Figure 9 – CBA Outputs Summary





Directional Estimates of Qualitative Benefits and Costs

Investing in waste management is a public good and investing in SSO capacity for The City will generate benefits for all members of society through enhanced environmental, economic and societal outcomes. When performing a CBA on an investment in a public good, it is expected the Government Financial Account will be negative. Based on this CBA, this is true of the Government Financial Account for both options. The financial costs exceed the financial benefits in the range of \$87 million to \$103 million for the expansion option, \$111m to \$134m for option 2A and \$127m to \$153m for option 2B (all amounts are in 2021 NPV terms). Ranges calculated represent upper and lower bound estimates based on 6% and 8% social discount rates and are not subject to inflation, differing from the financial case assessment (refer to Section 6.6). The key differentiator between option 1 and option 2A is the RNG by-product revenue stream unlocked under the expansion option (option 1), which helps reduce the net cost burden on The City. The key differentiators between option 2B is the additional annual operating cost of processing digestate compost following the AD process and new odour controlled building and processing systems.

A breakdown of the estimates are included in the table below.

Key Quantitative Inputs and Outputs of the Government Financial Account (in \$millions)				
Costs (\$ NPV)	Option 1 Expansion	Option 2A Outsourcing with Composting	Option 2B Outsourcing with AD	
Operating Costs	(\$51 - \$67)	(\$44 - \$58)	(\$71 - \$93)	
Financing Costs	(\$26 - \$33)	(\$28 - \$37)	(\$34 - \$44)	
Capital Costs	(\$38 - \$40)	(\$40 - \$42)	(\$48 - \$51)	
Total Cost	(\$116 - \$140)	(\$113 - \$137)	(\$154 - \$188)	
Benefits				
Revenue	\$29 - \$37	\$2 - \$3	\$27 - \$35	
Discount Rate		Percentage		
Social Discount Rate	6% - 8%			
Outputs	Net Present Value			
Net Benefit (Cost)	(\$87 - \$103)	(\$111 - \$134)	(\$127 - \$153)	

#### Table 18: Key Quantitative Inputs and Outputs to the Government Financial Account

There are other benefits across each of the evaluation accounts which may offset the financial costs of both options. While the benefits and costs associated with the other accounts (and some benefits and costs within the Government Financial Account) were not quantified, EY has provided qualitative directional estimates. A summary of qualitative scores and the qualitative benefits and costs under each of the five (5) evaluation accounts is presented in the table below.

#### Table 19: Qualitative Economic Assessment Summary

MAE Account	Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD	Best Performing Option
Government Financial Account	Low Benefit	Medium Cost	Medium Cost	Option 1 - Expansion
Resident 'Consumer' Account	Low Cost	Medium Cost	Medium Cost	Option 1 - Expansion
Economic Development Account	Medium Benefit	Low Benefit	Medium Benefit	Option 1 – Expansion and Option 2B – Outsourcing with AD
Environmental Account	Medium Benefit	Low Cost	Low Benefit	Option 1 - Expansion
Social Account	Low Benefit	Medium Cost	Medium Cost	Option 1 - Expansion

For the purposes of this Business Case, an equal weighting was applied to each of the evaluation accounts. The following sub-sections present the assessment of the costs and benefits associated with the five (5) evaluation accounts.

#### 5.2.1 Government Financial Account

#### Table 20: Government Account Summary

#### **Account Summary - Government Financial Account**

#### Description

This account assesses the net change in financial position for The City and reflects the net cost or benefit to its citizens.

#### **Overall assessment**

Based on the quantitative analysis undertaken, both options represent a net cost to The City, which is to be expected with major investment in public goods, however the expansion option presents a lower cost burden to The City relative to the outsourcing option. Based on the evaluation of qualitative benefits and costs, the expansion option presents a net benefit due to the cost stability offered whilst the outsourcing option presents a net cost due to risks associated with facility downtime and cost volatility.

Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Quantitatively Assessed + Revenue generation	Quantitatively Assessed + Revenue generation	Quantitatively Assessed + Revenue generation
<ul> <li>Capital, operating, maintenance/lifecycle cost</li> </ul>	Capital, operating, maintenance/lifecycle cost	Capital, operating, maintenance/lifecycle cost
<b>Net Impact (NPV):</b> Net Cost of \$87m - \$103m	<b>Net Impact (NPV):</b> Net Cost of \$111m – \$134m	Net Impact (NPV): Net Cost of \$127m – \$153m
Qualitatively Assessed	Qualitatively Assessed	Qualitatively Assessed
<ul> <li>Processing efficiency</li> <li>Cost stability</li> </ul>	Processing inefficiency	Processing inefficiency
Reputational impact	Reputational impact	Reputational impact
	Revenue loss from competition	Revenue loss from competition
	Cost volatility	Cost volatility
<b>Net Impact:</b> Net Economic Benefit (Low)	Net Impact: Net Economic Cost (Medium)	Net Impact: Net Economic Cost (Medium)

#### **Government Financial Account Benefits of Option 1 (Expansion)**

#### **Revenue Generation**

Investment in AD under the expansion option is anticipated to unlock an additional revenue stream for The City. Through its end market analysis, The City has confirmed there is market appetite for the RNG produced by AD and expects to be able to receive a competitive rate per gigajoule ("GJ") for the RNG that will be produced. A breakdown of the anticipated revenue from sale of RNG is contained in the table above and is anticipated to be approximately \$29 million to \$37 million over the forecast period in 2021 NPV terms based on information provided by The City.

#### **Processing Efficiency**

The expansion option (option 1) presents a lower net operating cost per tonne due to the introduction of AD revenue which offsets costs. Based on modelling and information provided by The City, the per tonnage processing cost of the expansion is expected to be half that of the private market in 2021 NPV terms (\$35 to \$45 for the expansion option versus \$51 to \$74 for the outsourcing option). The difference in per-tonnage processing

costs is represented by the difference between total operating cost under the expansion and outsourcing options.

Furthermore, the expansion option would be facilitated under an existing P3 contract. The risk transfer, performance regime and accompanying payment mechanism integrated into the existing P3 contract under expansion option is unlikely to be replicated under a standard contractor agreement with a third-party operator, and therefore the incentivization of operational efficiency and innovation is also unlikely to be replicated, but not impossible. To that end, innovation remains a potential benefit under option 2, albeit with a low likelihood of occurring. Given operating efficiency has been quantitatively captured under operating costs, this economic cost was precluded from EY's qualitative scoring evaluation.

#### **Cost Stability**

Investment in the existing facility under the P3 contract provides a degree of long-term cost stability to The City, as incremental risk of tonnage and operational cost volatility associated with the excess waste will be transferred to private sector operator. While The City may incur a break or amendment fee for modifying the existing project agreement in place, this could potentially be removed via negotiation if changes to the existing contract were in the interests of both parties. While investment in HFPAD has potential to expose The City to energy demand fluctuations, this has been mitigated through end-market analysis undertaken by The City evidencing sufficient demand, and potential for The City to engage in an off-take contract with a suitable utility provider. The cost stability afforded by the existing P3 long-term contract is expected to have a medium level of impact on The City, as it allows a degree of confidence in longer term strategic and financial planning which may unlock additional efficiency benefits down the line, and a high probability of occurring.

#### **Relevant Government Financial Account Costs of Option 1**

#### Capital, Operating, Maintenance and Lifecycle Costs

A breakdown of the capital, operating and maintenance and lifecycle costs that The City would incur under the expansion option is summarized in Table 18, and further detailed in under the financial case in Section 6. Based on analysis of inputs, it is anticipated that the total gross cost, in NPV, of the expansion option (not including revenue) would range from \$116 million - \$140 million.

#### **Reputational Impact**

The risk of disruption to The City's organic waste management system under the expansion option is anticipated to be limited to transfer, haulage and processing, all of which are downstream of collection services. Therefore, there is no reputational cost in relation to service level disruption anticipated under either option. Investment in the expansion is however anticipated to increase the cost of waste management services to the average household, albeit to a lesser extent than outsourcing.

Research on reputation or reputation management in the public sector, and in particular, local government, is difficult to find as few have made the connection between reputation and the benefits to the public sector, therefore a qualitative approach has been applied. Ryan (2007)<sup>1</sup> assesses the qualitative dimensions of local government reputation using a private sector framework, which among other areas considers the impact of products and services on reputation. Translated to a government setting, Ryan forwards value for money as one of the key aspects of reputation development within the product and service dimension for local government. The increased cost to average households anticipated under the expansion option reflects investment which will not directly affect collection services, and therefore perceived value for money, and by extension reputation, is

<sup>&</sup>lt;sup>1</sup> Ryan, Barbara, *How can the corporate sector concepts of 'reputation' and 'trust' be used by local government? A study to establish a model of reputation management for local government.* Asia Pacific Public Relations Journal, 8. pp. 37-75. ISSN 1440-4389 (https://eprints.usq.edu.au/5250/)

likely to be adversely affected. Given the increase in cost to the average household is lower in expansion relative to outsourcing, the impact of the economic cost is assumed to be low, however with a high probability of occurring.

#### **Relevant Government Financial Account Benefits of Option 2 (Outsourcing)**

#### **Revenue Generation**

Under option 2A, revenue could be generated from the sale of compost produced through the third-party composting facility, and potential cost savings from using the existing market capacity in the interim period to process waste that is above The City's current capacity. It should however be noted that revenue would most likely remain with the private processor, and any benefit would likely come in the form of reduced fees payable by The City provided third-party operators pass on revenue benefits as opposed to absorbing it. It should be noted that market capacity has not been verified and is based on market sounding feedback. Revenue from sale of compost is anticipated to be minor (roughly \$270,000 per year in real (2021) dollars).

Revenue under option 2B it is anticipated to be material due to sale of RNG and by-products from third party anaerobic digestion. While the commercial arrangement between The City and a future operator remains to be confirmed, for the purposes of this analysis it is assumed that The City could either receive a portion of revenue generated by the third-party operator, or the revenue would be used by the operator to offset operating costs charged to The City. Furthermore, it is assumed that the analysis undertaken by The City to confirm market appetite for RNG is agnostic of supplier, therefore RNG produced by a third-party operator is likely to have sufficient demand.

#### Relevant Government Financial Account Cost of Option 2 (Outsourcing)

#### Capital, Operating, Maintenance and Lifecycle Costs

A breakdown of the capital, operating and maintenance and lifecycle costs that The City would incur under the outsourcing option is summarized in Table 18. and further detailed in the financial case in Section 6. Based on financial analysis of inputs provided by The City, it is anticipated that the total gross cost (not including revenue) in NPV dollars of option 2A would range from \$113 million to \$137 million, and \$154 million to \$188 million for option 2B.

#### **Processing Inefficiency**

The outsourcing option will likely perform less efficiently from a time and cost perspective due to a lack of economies of scale and the contracting framework within which it would operate. Market sounding feedback suggested that there remains limited capacity with the private market to take on the excess material for the existing facility. A third-party operator is unlikely to match the economies of scale of the existing facility and expansion, the largest of its kind in Canada, which along with the need to potentially purchase land and obtain approvals, will inevitably drive up the per tonnage processing cost. The additional systems and building footprints are already in place within the current facility and would be an additional cost requirement for option 2A and option 2B. With respect to option 2B in particular, it is anticipated that a key differentiator between option 1 and option 2B will be additional annual operating cost of processing (i.e., composting) digestate following the AD process due to a lack of existing infrastructure available to compost digestate. These incremental costs for the private sector represent not only a reduction in operational efficiency under the outsourcing options, but also, the greater distances SSO would need to be transported for processing.

Furthermore, for the expansion option there will be updates to the existing P3 agreement in order to include operations, as opposed to the outsourcing option, which would likely be facilitated under a traditional contractor agreement. The risk transfer, performance regime and accompanying payment mechanism integrated into the existing P3 contract under the expansion option is unlikely to be replicated under standard contractor agreement,

and therefore the incentivization of operational efficiency and innovation is also unlikely to be replicated. Given operating efficiency has been quantitatively captured under operating costs, this economic cost was precluded from the qualitative scoring evaluation.

#### **Reputational Impact**

Similar to the expansion option, it is understood that there will be no disruption to The City's organics collection service, and therefore no associated reputational impact, however residents will likely experience a greater increase in fees relative to expansion to pay for the additional investment required for processing excess waste.

The increased cost to average households anticipated under the outsourcing option reflects investment which will not directly affect collection services, and therefore perceived value for money, and by extension reputation, is likely to be adversely affected. Given the increase in cost to the average household is higher in outsourcing relative to expansion, the impact of the economic cost is assumed to be medium with a high probability of occurring.

Furthermore, based on the market sounding, participants suggested that there was limited capacity currently within the market to accommodate The City's excess waste, and that increased market capacity would require capital investment. Under the outsourcing option, it remains unclear which site would accommodate The City's excess waste and the level of investment required. At a minimum, under the outsourcing option investment in a new transfer station and long-distance haulage of SSO would be required. If the selected third-party operator did not have sufficient capacity, then further capital investment in their facility would also be required. The combination of long-haul trucks moving through previously uncharted routes, along with construction of a transfer station and potential capital investment in a third-party processing plant stand to disrupt communities within the city and create adverse reputational impacts. Given the increase in cost to the average household and the likely amenity impacts to surrounding communities due to anticipated construction of the transfer station and third-party processing facility, the impact of the economic cost is assumed to be medium, with a high probability of occurring.

#### **Cost Volatility**

There is a small risk under the outsourcing option that third-party contractors under-bid to win the contract, and then propose above market increases to per-tonnage processing rates during contract renewal when there is less competition and alternatives available to The City due to committed investment in the transfer station. This could cause The City's SSO processing costs to grow at a greater than average rate, thereby eroding value for money to Calgarians. The impact of the economic cost is assumed to be medium, with a medium probability of occurring. This score is based on EY's observations in the waste sector market, where operators have sought to 'corner the market' when municipalities do not have viable alternative options and charge above average rates in the past.

#### 5.2.2 Resident Consumer Account

#### Table 21: Summary of Resident Consumer Account Assessment

#### **Account Summary - Resident Consumer Account**

#### Description

This account assesses the benefits the residents of Calgary will experience and negative consequences they may suffer from investment in either option.

#### **Overall assessment**

Based on the analysis undertaken, both options represent a net cost to residents, as a result of service charge increases required to fund investment in either option. The incremental increase in the expansion option is comparatively less than the outsourcing option, due to the relatively lower capital investment need, which translates to a marginally lower economic cost.

Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Qualitatively Assessed	Qualitatively Assessed	Qualitatively Assessed
Service charge increase	Service charge increase	Service charge increase
Net Impact: Net Economic Cost (Low)	Net Impact: Net Economic Cost (Medium)	Net Impact: Net Economic Cost (Medium)

#### **Relevant Resident Consumer Account Benefits of Option 1 (Expansion)**

No benefit identified under the expansion option.

#### **Relevant Resident Consumer Account Costs of Option 1 (Expansion)**

#### Service Charge Increase

While the assessment in Section 0 focuses on the reputational implication of increases to service charges to residents, this section focuses on the economic cost borne by residents specifically. Based on the economic modelling conducted, the additional cost to the per household Green Cart Program fee per annum under expansion is anticipated to be less than the outsourcing option. In order to avoid double counting the cost incurred by households with the cost incurred by The City under the Government Financial Account, this economic cost has been assessed qualitatively, and it is assumed that the impact of this cost will be low, with a high probability of occurring. The low impact of this economic cost assumes that the increase to Green Cart Program fees presents a minor deviation from the existing fee.

#### Relevant Resident Consumer Account Benefits of Option 2 (Outsourcing)

No benefit identified under the outsourcing option.

#### Relevant Resident Consumer Account Costs of Option 2 (Outsourcing)

#### Service Charge Increase

Based on the economic modelling, under the expansion option, the additional cost to the per household Green Cart Program fee per annum is anticipated to be greater than the expansion option. Similar to the expansion option, in order to avoid double counting the cost incurred households with the cost incurred by The City under the Government Financial Account, this economic cost has been assessed qualitatively, and it is assumed that the impact of this cost will be medium, with a high probability of occurring. The medium impact of this economic cost is based on the assumption that the increase to service charges under the outsourcing option presents a higher potential deviation from the existing service charge relative to the expansion option.

#### 5.2.3 Economic Development Account

#### Table 22: Summary of Economic Development Account Assessment

#### **Account Summary - Economic Development Account**

#### Description

The account assesses the economic impacts to the broader Calgary economy that may result from investment in either option.

#### **Overall assessment**

Based on the analysis undertaken, both options represent a net economic benefit to the City of Calgary, as a result of job creation and enhanced economic resiliency. Option 1 presents a higher benefit to The City relative to option 2A) due to benefits unlocked through investment in AD, whilst presents a similar level of benefit to option 2B. This is because Option 2B presents similar AD-related benefits, builds redundancy in The City's waste management system, however, presents a risk that benefits flow outside of The City based on location

Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Qualitatively Assessed	Qualitatively Assessed	Qualitatively Assessed
<ul> <li>Job creation</li> <li>Revenue diversification</li> <li>Energy resilience</li> <li>Lack of redundancy</li> </ul>	<ul> <li>Job creation</li> <li>Added redundancy</li> <li>Benefits flow outside of The City</li> </ul>	<ul> <li>Job creation</li> <li>Revenue diversification</li> <li>Added redundancy</li> <li>Benefits flow outside of The City</li> </ul>
<b>Net Impact:</b> Net Economic Benefit (Medium)	<b>Net Impact:</b> Net Economic Benefit (Low)	Net Impact: Net Economic Benefit (Medium)

#### Relevant Economic Development Account Benefits of Option 1 (Expansion)

#### Job Creation

The expansion will bring several economic benefits to The City and the broader Province. The City, along with its private sector operator is projecting almost \$10 million will be put towards employing workers needed in Alberta to design and manage the project. According to The City's private sector operator, this translates to 50 full-time jobs ranging from skilled trades, management and engineering in Calgary for the two (2) year construction period, and an additional five (5) to seven (7) full time jobs to operate and maintain the expanded facility. The operation and maintenance of the AD facility creates highly skilled jobs in Calgary which may not otherwise be created if the RNG was not created locally within the city. This is considered a high impact economic benefit with a medium probability of occurring. The rationale behind a high score on impact and medium score on probability is to account for the creation of net new jobs in The City, and potential attraction of out of city skilled workers who may contribute to the overall economy and tax base.

#### **Revenue Diversification**

The expansion enables the sale of RNG as a net new revenue source to The City which will help offset operating costs. This would contribute towards cost stability, instill greater confidence and certainty on long term financial planning projections for the waste management business, and potentially reduce future escalation pressure on Green Cart Program fees.
Furthermore, The City has confirmed market appetite for the RNG that will be produced, with several options available. At the time of writing, The City is evaluating the Canadian Clean Fuel Standards pathway or considering entering into an agreement with a utility company via an off-take contract. This is considered a high impact economic benefit due to its contribution and strategic alignment towards Calgary's goal of enhancing economic resiliency, with a high probability of occurring.

#### **Energy Resilience**

Biogas feedstocks for RNG are generated continuously from a variety of sources (which means high availability rates), therefore the use of RNG increases and diversifies domestic energy production for the province and available energy sources for The City. This would help insulate The City from external market forces in the energy sector. This is considered a medium impact economic benefit with medium probability of occurring.

#### **Relevant Economic Development Account Costs of Option 1 (Expansion)**

#### Lack of Redundancy

Development of additional capacity within the existing facility does not mitigate against the risk of major disruption to The City's waste management operations should the facility be taken offline for a duration of time due to 'shock' events or failure to comply with environmental regulation. Should the facility be taken offline, The City would need to divert SSO to third-party contractors at a premium price, and send remaining SSO to the landfill, which would create several adverse environmental outcomes for The City. This is considered a medium impact economic cost with a low probability of occurring.

#### Relevant Economic Development Account Benefits of Option 2 (Outsourcing)

#### Job Creation

Option 2 (outsourcing) is likely to drive the creation of jobs for the design, construction, operation and maintenance of a new transfer facility and any capital investment required to upgrade private-sector processing capacity. While The City has not undertaken a detailed study of the magnitude with respect to job creation and local business stimulus under the outsourcing option, the findings of the expansion option can be used as a proxy to understand the magnitude of benefits one could expect. For the purposes of this analysis, it is assumed that a similar number of jobs (50-full time jobs) will be created across the construction of a new transfer facility (in the event the operator is located outside of city limits) and required private investment in expanding processing capacity to accommodate The City's excess waste. The City's existing facility currently employs 27 full-time positions to process 100,000 tonnes of SSO, giving a ratio of one employee per 3,700 tonnes processed. Using this ratio, a rough order estimate of eight full-time staff for the operation and maintenance of the additional capacity required within the private sector can be established. This provides a total of 50 full-time jobs created during construction and eight full-time jobs created for operation and maintenance for the outsourcing option. Furthermore, according to the Jacobs Transfer Station Operations cost estimate, a further four field staff jobs is anticipated to be created to operate the transfer station. Furthermore, with respect to option 2B in particular, use of AD technology to process waste via a third-party operator may create net new highly-skilled jobs in Calgary. This is considered a medium impact economic benefit with high probability of occurring. The reason for the medium impact score even through more jobs are created relative to expansion is due to the high likelihood that job creation benefits will flow outside of the city, as per feedback received from market sounding (see below section).

#### Revenue Diversification (Option 2B Only)

Option 2B has potential to enable the sale of RNG as a net new revenue source to The City of help offset operating costs. While the commercial arrangement between The City and a future operator remains to be confirmed, the revenue could be used by the operator to offset operating costs or tipping fees charged to The City.

#### Added Redundancy

A key economic benefit of the outsourcing option is that it will help build capacity within the Province's waste processing system, either via increased composting capacity or AD capacity, which in turn can build greater redundancy. Development of processing capacity within the region will allow greater capacity to partially divert The City's waste should the existing facility be taken offline due to operational or regulatory issues. This would help reduce environmental costs associated with dumping SSO into a landfill, however premium rates would still be paid by The City to divert waste to third-party operators. This is considered a high impact economic benefit with low probability of occurring.

#### Relevant Economic Development Account Costs of Option 2 (Outsourcing)

#### Benefits Flow Outside of City

Based on market sounding feedback, there is a likelihood that the third-party operator would process The City's excess waste outside of the city limits. This presents a potential opportunity cost to The City, as job creation and support of local businesses as part of required capital investment and operation may flow outside of the city to another municipality. For example, should a third-party operator from municipalities outside of Calgary be selected to process the excess waste, many of the economic development benefits will flow through to the other municipality rather than the City of Calgary. This is considered a high impact economic cost, with a medium probability of occurring. The impact of this economic cost has already been factored into the scoring of the job creation economic benefit under the outsourcing option, therefore this economic cost was not assessed to avoid double counting.

#### 5.2.4 Environmental Account

#### Table 23: Summary of Environmental Account Assessment

#### **Account Summary - Environmental Account**

#### Description

This account assesses the environmental impacts from construction, infrastructure use, and increased transportation-activity related to investment in either option.

#### **Overall assessment**

Based on the analysis undertaken, option 1 represent the greatest net benefit to The City, based on several environmental benefits unlocked through investment in AD technology and the subsequent use of RNG within the broader economy. Whilst option 2B also presents similar AD technology related benefits, option 2B, along with option 2A, presents several costs to The City, due to the environmental impact of increased journey times to transport SSO for processing and the material risk of regulatory breaches resulting in facilities being taken offline and waste being diverted to landfill.

Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Qualitatively Assessed + GHG reduction + Circular economy support + Air quality improvement - Downtime landfill diversion	Qualitatively Assessed + Innovation Transportation costs Regulatory compliance breach	Qualitatively Assessed + Innovation + GHG reduction + Circular economy support Transportation costs - Regulatory compliance breach
Net Impact: Net Economic Benefit (Medium)	Net Impact: Net Economic Cost (Low)	Net Impact: Net Economic Benefit (Low)

#### Relevant Environmental Account Benefits of Option 1 (Expansion)

#### **GHG** Reduction

The generation and use of RNG reduces the emission of carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) into the atmosphere in two (2) ways – diversion of waste which would otherwise have been sent to the landfill to the HPFAD, and through displacement of natural gas with RNG in the distribution network. Based on work commissioned by The City, the GHG reductions anticipated as a result of the diversion of waste and displacement of natural gas is anticipated to be approximately 72,000 tonnes of CO<sub>2</sub> per year. This is considered a medium impact economic benefit with high probability of occurring.

#### **Circular Economy Support**

The expansion could help The City accelerate its move towards a circular economy by extending the use of RNG as a source of local electricity, heating, cooking, processing and as fuel for transportation. This would not only reduce the overall carbon footprint of residents and Calgary as a whole, but also help enhance the energy resilience. Uptake of RNG is dependent on The City's ability to market the product and the anticipated uptake, both of which are expected to be strong. This is considered a medium impact economic benefit with high probability of occurring.

#### Air Quality Improvement

RNG, following additional compression to CNG, can be used to fuel medium and heavy-duty transportation fleets as a cleaner alternative to diesel, which would lead to significant improvements to air quality across Calgary. CNG engines reduce nitrous oxides by up to 90% relative to diesel fueled engines and can reduce GHG emissions by up to 20% relative to diesel engines. This is considered a medium impact economic benefit with high probability of occurring.

#### Relevant Environmental Account Costs of Option 1 (Expansion)

#### **Downtime Landfill Diversion**

Should the facility be taken offline for a duration of time due to 'shock' events or failure to comply with environmental regulation, The City would need to divert SSO to the landfill, which would create several adverse environmental outcomes for The City that are typical of landfills. Such outcomes include surface water contamination, ground water contamination, bad smell or odour, release of greenhouse gases (increased fugitive GHG emissions), accidental hazard caused by fire, slope instability, loss of vegetation and soil contamination.<sup>2</sup> Landfilling organics also lowers The City's diversion rate and ultimately decreases the life expectancy of the landfill. It should however be noted that The City has invested in the past to mitigate against these impacts, therefore this economic cost is anticipated to have a low impact with a low probability of occurring.

#### Relevant Environmental Account Benefits of Option 2 (Outsourcing)

#### Innovation

As noted in the Government Financial Account section of this analysis, without clear identification of who the thirdparty processing contractor would be under the outsourcing option, it remains difficult to make a like-for-like comparison on benefits or costs resulting from their approach to processing SSO. Nevertheless, it remains reasonable to assume the possibility that the private sector could provide innovations not otherwise implemented by the expansion option, which could result in the excess waste being processed more efficiently, and in turn

<sup>2</sup> Ryan, Barbara, How can the corporate sector concepts of 'reputation' and 'trust' be used by local government? A study to establish a model of reputation management for local government. Asia Pacific Public Relations Journal, 8. pp. 37-75. ISSN 1440-4389 (https://eprints.usq.edu.au/5250/)

reducing the overall environmental impact. This is considered a low impact economic benefit with low probability of occurring.

#### GHG Reduction (Option 2B Only)

Similar to option 1, use of AD technology as part of option 2B will potentially increase the uptake of RNG and reduce GHGs in the Province. This is considered a medium impact economic benefit with high probability of occurring.

#### Circular Economy Support (Option 2B Only)

Use of RNG under option 2B as a source of local electricity, heating, cooking, processing and as fuel for transportation will allow The City to move closer towards its circular economy objectives. This would not only reduce the overall carbon footprint of residents and Calgary as a whole, but also help enhance the energy resilience. Similar to option 1, uptake of RNG is dependent on the third-party operator's ability to market the product and the anticipated uptake, both of which are expected to be strong. This is considered a medium impact economic benefit with high probability of occurring.

#### Relevant Environmental Account Costs of Option 2 (Outsourcing)

#### **Transportation Costs**

One trade-off with outsourcing excess waste will be the additional travel time added to the SSO processing process if third-party contractors will be required to haul the excess waste from a transfer station to their processing facility outside of City limits. Assuming the transfer facility is built near the existing Composting Facility, market sounding participants had facilities located approximately 25km away (representing a 50km roundtrip). The additional journey time translates to higher GHG emissions produced per tonnage of SSO processed. This is considered a medium impact economic cost with medium probability of occurring.

#### **Regulatory Compliance Breach**

Facility closure due to a failure to comply with regulatory standards remains a material risk within the private sector, as flagged by participants in the market sounding. Should the chosen contractor close down for a duration of time due to a failure to comply with environmental regulation, The City would need to divert SSO to the landfill, which would have several environmental impacts noted earlier in this section, such as surface water contamination, ground water contamination, bad smell or odour, release of greenhouse gases, accidental hazard caused by fire, slope instability, loss of vegetation, soil contamination, lower diversion rate, and reduced landfill life expectancy. This is considered a medium impact economic cost with low probability of occurring.

#### 5.2.5 Social Account

#### Table 24: Summary of Social Account Assessment

#### Account Summary - Social Account

#### Description

The account assesses the social effects of the investing in either option.

#### **Overall assessment**

The expansion presents a net social benefit to The City due to the energy education opportunities derived from investment in HPFAD, and flow on benefits for further waste diversion and shift towards a circular economy. Outsourcing may present a net social cost to The City primarily due to potential investment in a new transfer station if a new facility was built outside city limits, and potential investment in processing capacity, all of which may adversely affect the quality of life and amenity of surrounding communities.

Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Qualitatively Assessed + Renewable energy education Adverse amenity impacts	Qualitatively Assessed Adverse amenity impacts	Qualitatively Assessed Adverse amenity impacts
Net Impact: Net Economic Benefit (Low)	<b>Net Impact:</b> Net Economic Cost (Medium)	Net Impact: Net Economic Cost (Medium)

#### **Relevant Social Account Benefits of Option 1 (Expansion)**

#### Renewable Energy Education

Investment in anerobic digestion presents a unique opportunity to bring further incremental education around renewable energy, sustainable development and the circular economy to residents of Calgary and demonstrate to citizens how The City is 'leading by example'. Establishment of tours, educational brochures and marketing can all work to educate residents on process of converting waste to RNG and contribute towards behavioural change that supports a circular economy and decreased waste production. Tangible benefits of education include a reduction in waste contamination, an increase in waste diversion and greater consumption of RNG within the community. This is considered a low impact economic benefit with high probability of occurring.

#### **Relevant Social Account Costs of Option 1 (Expansion)**

#### **Adverse Amenity Impacts**

Increased processing capacity at the existing facility may increase existing odour and noise impacts on surrounding land uses, presently considered to be minor, which may adversely affect amenity and quality of life. Given that the existing facility is located on industrial land, this is considered a low impact economic cost with low probability of occurring.

#### **Relevant Social Account Benefits of Option 2 (Outsourcing)**

No social account benefits were identified for the outsourcing option.

#### **Relevant Social Account Costs of Option 2 (Outsourcing)**

#### Adverse Amenity Impacts

If the operator third-party operator will process waste outside of city limits, development of a transfer station and a processing facility on greenfield land may create net new amenity impacts in the form of noise and odour which may adversely impact quality of life for surrounding communities. This is considered a medium impact economic cost with medium probability of occurring.

### **5.3 Summary of Economic Case Assessment Outputs**

The table below summarizes the outputs of the qualitative economic case assessment. The expansion provides a higher degree of potential benefits to the City.

#### Table 25: Summary of Qualitative Costs and Benefits

Summary of Qualitative Economic Case Assessment			
Option 1 – Expansion	Option 2 – Outsourcing		
Government Financial Account			
<ul> <li>Benefit: Provides operational efficiency benefits from a time and cost perspective due to economies of scale and the more incentives-driven contracting framework within which it would operate.</li> <li>Benefit: Enables cost stability through a combination of long-term contracting and risk transfer within the existing P3 framework, to enable long-term strategic and budgetary planning with a degree of confidence, improving value for money outcomes to the taxpayer.</li> <li>Cost: Increased cost burden on residents to help fund the expansion option will likely have an adverse reputational impact on The City, however the impact is likely to be less than the outsourcing option due to the lower funding requirement.</li> </ul>	<ul> <li>Benefit: Provides revenue generation opportunity to offset operating costs and tipping fees from the sale of compost generated through the third-party composting facility, and cost savings from using the existing market capacity in the interim period to process waste that is above The City's current capacity.</li> <li>Cost: The outsourcing option will likely perform less efficiently from a time and cost perspective due to a lack of economies of scale and limited capacity within the existing market, and the traditional contracting framework within which it would operate that does not incentivize innovation and efficiency.</li> <li>Cost: The risk of new regulation, failure to comply with existing regulation, and operational and financial mismanagement removing processing capacity without notice due to the third-party operator closing down is a material risk expressed by the market and The City and represents a potential cost to The City under the outsourcing option.</li> <li>Cost: Increased cost burden on residents to help fund the outsourcing option will likely have an adverse reputational impact on The City, and the impact is likely to be greater than under the expansion option due to the higher upfront funding requirement.</li> <li>Cost: Small risk that third-party operators under-bid to win the contract, and then propose above market increases during contract renewals when there is less competition, which would cause The City's SSO processing costs to grow at a greater than average rate and erode value for money.</li> </ul>		
Net Impact: Net Economic Benefit (Low)	Net Impact Option 2A: Net Economic Cost (Medium) Net Impact Option 2B: Net Economic Cost (Medium)		
Resident Consumer Account			
<b>Cost:</b> Based on EY's modelling, required capital investment in expansion is anticipated to translate to an increase to Green Cart Program fees per household per annum , however this	<b>Cost:</b> Based on EY's modelling, required capital investment in outsourcing is anticipated to translate to an increase to Green Cart Program fees per household per annum, and this		

Summary of Qualitative Economic Case Assessment			
Option 2 – Outsourcing			
increase is anticipated to be greater than that required under the expansion option.			
Net Impact Option 2A: Net Economic Cost (Medium)			
Net Impact Option 2B: Net Economic Cost (Medium)			
<ul> <li>Benefit: Anticipated to create 50 full time jobs during the construction period and a further 8 full time jobs during the operational period of the facility.</li> <li>Benefit (Option 2B only): Potential for revenue generated by third-party to offset operating cost or reduce tipping fees.</li> <li>Benefit: Helps build capacity within the Province's organics processing system, which in turn builds greater redundancy. Development of processing capacity within the region will allow greater capacity to divert The City's waste should the existing facility be taken offline due to operational or regulatory issues.</li> <li>Cost: Potential opportunity cost to The City, as job creation and support of local businesses as part of required capital investment and operation may flow outside of The City to another municipality.</li> </ul>			
Net Impact Option 2A: Net Economic Benefit (Low) Net Impact Option 2B: Net Economic Benefit (Medium)			
<ul> <li>Benefit: Potential benefit of private sector providing innovations not otherwise implemented by expansion option, which could result in the excess waste being processed more efficiently, and in turn reducing the overall environmental impact.</li> <li>Benefit (Option 2B Only): GHG reductions from diversion of waste and displacement of natural gas through use of AD technology is anticipated to reduce GHG emissions within the Province.</li> <li>Benefit (Option 2B Only): Reduction in City GHG emissions and carbon footprint through accelerated shift towards circular economy, by extending the use of RNG as a source of local electricity, heating, cooking, processing and as fuel for transportation.</li> <li>Cost: Should the facility be taken offline for a duration of</li> </ul>			

Summary of Qualitative Economic Case Assessment			
Option 1 – Expansion	Option 2 – Outsourcing		
City's pursuit of a Canadian Clean Fuel Standards pathway, to displace the use of fossil natural gas, is successful. Cost: Should the facility be taken offline for a duration of time due to 'shock' events or failure to comply with environmental regulation, The City would need to divert SSO to the landfill due to a lack of capacity in private sector, which would create several adverse environmental outcomes for the City such as surface water contamination, bad smell or odour, release of greenhouse gases, accidental hazard caused by fire, slope instability, loss of vegetation, soil contamination, lower diversion rate, and reduced landfill life expectancy.	environmental regulation, The City would need to divert SSO to the landfill due to a lack of capacity in private sector, which would create several adverse environmental outcomes typically related to landfills such as surface water contamination, bad smell or odour, release of greenhouse gases, accidental hazard caused by fire, slope instability, loss of vegetation, soil contamination, , lower diversion rate, and reduced landfill life expectancy. It should be noted that The City has invested in its landfills in recent years to mitigate against these impacts.		
Net Impact: Net Economic Renefit (Medium)	Net Impact Option 2A: Net Economic Cost (Low)		
Net impact. Net Economic Benefit (Medium)	Net Impact Option 2B: Net Economic Benefit (Low)		
Social Account			
<b>Benefit:</b> Investment in AD presents a unique opportunity to bring further education around renewable energy, sustainable development and the circular economy to residents of Calgary. Tangible benefits of education include a reduction in waste contamination, an increase in waste diversion and greater awareness of RNG within the community.	<b>Cost:</b> Development of a transfer site on greenfield land, and further investment in processing capacity by the private sector may create net new amenity impacts in the form of noise and odour which may adversely impact quality of life for surrounding communities.		
<b>Cost:</b> Increased processing capacity at the existing facility may compound existing odour and noise impacts on surrounding land uses, which may adversely affect amenity and quality of life. Given that the existing facility is located on industrial land, this is considered to be a minor cost.			
	Net Impact Option 2A: Net Economic Cost (Medium)		
Net impact: Net Economic Benefit (Low)	Net Impact Option 2B: Net Economic Cost (Medium)		

# 6. Financial Case Assessment

This section summarizes the methodology, analysis and results of the quantitative analysis carried out on the options under consideration. The substantive output of the quantitative analysis is a comparison of the options in NPV terms. All outputs are provided in Canadian dollars.

### 6.1 Inputs, Assumptions and Timing

The subsections below detail the inputs, assumptions and timelines used to develop the financial model and conduct the comparative analysis of the options.

#### 6.1.1 Preliminary Inputs and Assumptions

To develop the NPV for each option, costs have been outlined and escalated using applicable inflation rates and other assumptions which are further discussed in the following sections. The preliminary analysis includes a comprehensive comparison of the whole of life costs to process up to a maximum of 60,000 tonnes for each option.

For the purposes of the quantitative analysis, option 1 is an expansion of the existing facility to include AD (as discussed in the above sections). Option 2A is outsourcing excess amounts to a private sector composting facility outside of City limits. Option 2B is outsourcing excess amounts to a private sector facility that uses AD technology located within the City of Calgary.

Given that there is not currently sufficient capacity to process the expected amounts within the region, as noted during the market soundings, the financial analysis reflects the need for the private organic waste processer to build a new facility, or expand an existing facility, with an operating contract from The City. As such, all option 2 assumptions are reflective of the capital costs, operating costs, and revenues for a privately operated facility.

The modelled cash-flow profiles are adjusted for the time value of money by applying a discount rate in order to determine the NPV of each option. Detailed financial model assumptions are described in the sections below.

The capital, operating and major maintenance cost estimates used for the purposes of this analysis were provided by The City and prepared by Jacobs. Estimates provided are considered indicative and are categorized as Class 4 estimates.

While option 2A (outsourcing with composting) has been selected to conduct the financial analysis of the outsourcing opportunity (option 2), market sounding participants indicated that there are a range of potential solutions. A number of participants noted that they currently use AD and other technologies that could generate RNG revenues in addition to compost revenues. As such, option 2B (outsourcing with AD) is included in the financial analysis as an AD facility. The robustness of both options 2A and 2B (including costs and revenues) have been tested as part of the sensitivity analysis in Section 6.9.

#### 6.1.2 Project Timelines

The financial model has been prepared using monthly cash flows for the construction period (36 months), quarterly loan repayments and annual cash flows over the operating and maintenance period (25 years) to reflect the full lifecycle of the Project (28 years). Each financial year was assumed to end on December 31, in line with The City's fiscal year. Due to differing cash flows for each option, the financial model calculates the estimated NPV of the options to allow for a comparison on a "like-for-like" basis.

The financial model start date used for the NPV calculations is the year approval for the Project is expected to be received. A consistent start date is used to ensure the NPV values can be accurately compared.

The construction start dates, duration and substantial completion dates are based on information in documents provided by The City. To ensure a "like-for-like" comparison of the options, a common timeline is assumed for both options.

The 25-year term for operations, maintenance and major maintenance works is representative of the general life of similar capital assets prior to substantial capital renewal works or technological obsolescence.

#### Table 26: Project Timeline

Milestone	Date		
Milestone	<b>Option 1 - Expansion</b>	Option 2 - Outsourcing	
Model Start Date	1-Jan-21	1-Jan-21	
Construction Start	1-May-22	1-May-22	
Construction Duration (months)	36	36	
Substantial Completion	30-Apr-25	30-Apr-25	
Operations & Maintenance Term Start Date	1-May-25	1-May-25	
Operations & Maintenance Term Duration (years)	25	25	
Operations & Maintenance Term End Date	30-Apr-50	30-Apr-50	

### **6.2 Capital Funding and Expenditure**

Base cost estimates for the options were provided by The City and prepared by Jacobs. The cost estimates provided for the quantitative analysis were reported at an indicative cost level and may be subject to changes.

Design and construction costs included in the preliminary analysis were developed by separating construction costs into three (3) components – development (i.e., design) costs, direct construction costs and project administration costs. The cost estimates consider general requirements including labour, materials, equipment, overhead, utilities, clean-up, and other project requirements.

All design and construction costs have a contingency amount built in. As such, no additional cost or risk contingency has been included as a separate cost item. Risk is assumed to be quantified in part through the contingency amount included in capital expenditure. Risk is also assessed qualitatively in Section 7 below.

The base case capital cost estimate for the expansion option (option 1) is outlined in the table below. *Table 27: Option 1 – Estimated Expansion Construction Costs* 

Construction Costs (\$k – Nominal)	Option 1 - Expansion	
Development Costs	5,385.6	
Direct Construction Costs	43,730.2	
Capital Administration Costs	1,046.6	
Total Construction Costs	50,162.4	

Option 2A (outsourcing with composting) base case assumes that a new transfer station and a new processing facility will need to be built to process 60,000 tonnes of organic waste. The financial analysis includes the capital costs summarized below for the construction of a transfer station within The City's geographic boundaries and a processing facility outside of City limits. Both facilities will be purpose-built spaces to meet the needs of this Project.

The base case capital cost estimate for Option 2B (outsourcing with AD) is outlined in the table below. As the AD processing facility is anticipated to be located within City limits, the capital costs included are only for a processing facility as there is no need for an additional transfer station.

Table 28: Option 2 – Estimated Outsourcing Construction Costs

Construction Costs (\$k – Nominal)	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Direct Construction Costs		
Construct Transfer Station	10,455.3	-
Land Acquisition - Transfer Station	1,304.8	-
Construct Processing Facility	39,659.1	61,483.5
Land Acquisition - Processing Facility	1,318.6	1,677.6
Total Construction Costs	52,737.9	63,161.1

All values in the table above are listed in nominal dollars. Nominal costs use real costs (stated in dollars at a specific point in time) and adjust for escalation NPV values are calculated based on the nominal cost inputs above and are discounted to account for the time value of money. Costs included throughout the Report will differ based on how they are listed.

### 6.3 Operating Funding and Expenditure

The costs included in this section are related to the Project operations for each option. Operating costs are annual amounts incurred over the operating period or contract term (i.e., 25 years). The base case assumes a maximum of 60,000 tonnes per year can be processed under either option. When amounts exceed 60,000 tonnes The City will need to consider additional solutions.

Operating costs are the fixed and variable costs to operate the AD expansion, the private processing facility or the transfer station (required for option 2A). The project operating administration costs are the amounts The City will incur for contract management and internal processes.

The estimated expansion operating costs are outlined below.

#### Table 29: Option – Estimated Expansion Operating Costs

Operating Costs (\$k - Real)	Option 1 - Expansion	
Annual Costs	5,729.9	
Average Annual Costs (\$Nominal)	7,999.4	
Total Costs (25-year term) (\$Nominal)	199,985.3	

For the purposes of the outsourcing option 2A analysis, The City assumes that a transfer station will be built for this Project within City limits. The City trucks will pick up food and yard waste from single family homes and deliver it to the private sector transfer station. The private sector operator will then haul all organic waste collected to its new processing facility outside of the City.

For the outsourcing option 2B analysis, no transfer station is assumed. Therefore, operating costs are only required for the new processing facility. Option 2B does, however, include a composting cost for 45,000 tonnes of digestate to ensure the analysis is consistent with what a private partner would be required to complete. After processing material through the digestor, the digestate (the output from the AD process) must be composted. Market sounding participants have estimated compost processing costs at a rate between \$55 and \$155 per tonne. A rate of \$55 per tonne would therefore be a conservative rate for analysis.

The following assumptions are also included in the outsourcing option analysis:

- Location of Processing Facility: While there are a number of potential locations for the new compost processing facility outside of Calgary, the location of a processing facility is assumed to be within a 49km radius around the City limits which forms the base assumption for transportation costs in the financial model. The location for the AD processing facility is assumed to be within City limits.
- Operating costs: The outsourcing options assumes that the rate charged to The City will allow the private sector to recover all of its operating costs.
- Capital Costs: The outsourcing option assumes that the rate charged to The City will allow the private sector to recover its capital costs.
- Return on Investment: The outsourcing option assumes that the rate charged to The City will allow the private sector to earn a return on its investment of approximately 12%.

The outsourcing option includes operating costs for the facility operator as well as The City. Both cost estimates are included in the table, below.

#### Table 30: Option 2 – Estimated Outsourcing Operating Costs

Operating Costs (\$k – Real)	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Operating Costs	4,601.2	8,274.0
City Operating Administration Costs	52.4	52.4
Annual Costs (\$Real)	4,653.6	8,326.4
Average Annual Costs (\$Nominal)	6,405.75	11,340.5
Total Costs (25-year term) (\$Nominal)	160,137.2	283,511.5

### 6.4 Maintenance Funding and Expenditure

In addition to operating costs, the model includes maintenance and major maintenance cost estimates. The distinction that is generally made between maintenance and major maintenance costs is as follows:

- Maintenance costs include amounts spent to help prevent the deterioration of infrastructure and ensure that it operates as required. These amounts are generally equal on an annual basis.
- Major maintenance costs are associated with planned replacement, renovation and refurbishment of building systems and equipment that have reached the end of their useful life. They are generally linked to specific elements (i.e., pre-processing, digestate composting).

Maintenance costs provided were estimated by Jacobs and are outlined in the table below.

#### Table 31: Major Maintenance Costs

Major Maintenance Costs (\$k – Nominal)	Option 1 - Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
5 Year Equipment Replacement	44.8	90.7	126.1
10 Year Equipment Replacement	5,091.7	17,347.0	9,173.1
20 Year Equipment Replacement	54.6	110.6	153.7
25 Year Equipment Replacement	48,534.8	35,503.4	54,555.6
Total (25-year term)	53,725.8	53,051.8	64,008.5

The table below summarizes the estimated total annual maintenance costs for each facility over a 25-year term.

#### Table 32: Total Maintenance Costs

Total Maintenance Costs (\$k – Nominal)	Option 1 - Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD
Maintenance Costs	13,611,.7	n/a	n/a
Major Maintenance Costs	53,725.8	53,051.8	64,008.5
Total (25-year term)	67,337.4	53,051.8	64,008.5

All values in the tables above are listed in nominal dollars.

### 6.5 Revenue and Cost Savings

Benefits were accounted for as revenues or cost savings for both options. In option 1 (expansion), this includes City revenues from the sale of RNG and savings from reducing the waste processed through the existing facility's compost tunnel system and instead, utilizing the AD system's available capacity at the start of operations. Forecasts indicate that there are available cost savings for The City when there is excess capacity within the AD system (i.e., less than 160,000 tonnes forecasted across the system). These savings have been included in the financial model.

In option 2A, this includes revenue from the sale of compost generated through the composting facility. In option 2B, this includes revenue from the sale of RNG produced through the AD system. Cost savings in both options 2A and 2B (if advantageous) are from using the existing market capacity in the interim period to process waste that is above The City's current capacity, effectively reducing overtime costs at the existing facility (personnel overtime and equipment overuse).

#### Revenues and cost savings are as follows:

#### Table 33: Total Revenues and Cost Savings

Total Revenues and Cost Savings (\$k – Nominal)	Option 1 - Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD	
Revenue	87,670.6	6,259.7	84,909.0	
Cost Savings	3,065.8	96.6	-	
Total (25-year term)	90,736.4	6,626.3	84,909.0	

Cost savings were evaluated in three (3) categories:

- ▶ Interim period (i.e., up to operational commencement of a new facility) outsourcing opportunities.
- Cost savings during operations resulting from reducing The City's existing facility operations to its intended capacity limit of 100,000 tonnes per year (realized under both options).
- Under option 1 (expansion), at operational commencement of the expansion, there is available capacity within the AD system. The operational plan for the new facility is to maximize the use of the 60,000 tonnes per year of AD capacity. This will result in expected cost savings for The City's existing facility operations that can be realized by processing less material through the compost tunnel system.

The table above includes the interim period outsourcing cost savings for 20,000 tonnes which the market has current capacity to process, as articulated by market sounding participants. The cost savings are incurred from 2022 – 2025 (i.e., prior to operational commencement of a new facility).

Cost savings during operations resulting from the Project will reduce The City's existing facility's processing amounts to below its designed capacity of 100,000 tonnes. The City's intent would be to maximize the use of a new AD facility as it has the ability to generate revenue and reduce the strain on the existing facility in the short-term. This will result in cost savings for both scenarios. These cost savings have been considered as part of the Business Case; however, they are not included in the financial model as their impact is the same for all options.

The savings under the expansion option from processing maximum tonnages through the AD expansion first with the remainder going through the existing facility have been provided by The City and are captured in the financial model as a projected reduction in variable costs (e.g., reduced utility consumption and payments to the private sector operator). As the forecasted tonnages increase year over year, the savings realized is reduced until the point both the AD system and the existing compost tunnel system are used at full capacity.

### 6.6 Economic and Financial Assumptions

The economic and financial assumptions used in the financial options analysis are shown below. In this section, it is important to consider the ongoing and residual effects of the COVID-19 pandemic. The sensitivities will address some of the potential effects by testing the robustness of each option by considering different rates and scenarios. There continues to be volatility in the financial markets, and the results should be considered accordingly.

#### 6.6.1 Discount Rate

Cash flows in the financial model are assumed to occur at the end of the period in which they are incurred and are discounted accordingly. Discount rate assumptions are provided by The City for the expansion option and reflect the risk-free borrowing rate for the City for both options. The rate used is the May 15, 2021 Alberta Capital Finance Authority ("ACFA") indicative rate for a 25-year period.

#### 6.6.2 Inflation Rate

The inflation rate assumptions used in the preliminary analysis are based on The City of Calgary's historical data for the Consumer Price Index ("CPI").

The general and construction inflation rate of 2.0% has been used in the base case of the analysis for both options. The average rate of 2.0% aligns with the current inflation rate and reflects the long-term average for Canada. The value is also within the Bank of Canada's inflation control target range of 1% to 3%.

Revenue inflation has been set at zero for both options per discussions with The City. Biogas revenue is based on a Power Purchase Agreement which will have a set rate with a unique, negotiated inflation rate, if any. As such, The City chose a conservative approach to forecast revenue.

### **6.7 Financial Cost Assumptions**

The expansion option assumes a fully debt funded approach during construction. Under this option, the interest during construction is paid by The City throughout construction. The principal debt amount is then scheduled to be repaid over the 25-year operations term in semi-annual payments.

Under the outsourcing option, the capital costs are financed by the private operator. The model assumes that the private sector will fund construction by a combination of long-term debt provided by lenders and equity provided by the private operator. Long-term debt is modelled to be repaid over the 25-year operations term along with payments to satisfy equity returns. Debt and equity service payments during the concession term are complemented with monthly payments for operations and major maintenance activities.

The following table summarizes the financing assumptions used to develop the preliminary assessment. The assumptions, including sources and rationale, are outlined in the table below. Market data are reflective of recently closed transaction data including a project that has reached financial close through the COVID-19 environment.

Assumptions	Value	Source and Rationale
Option 1 - Expansion		
Bank: Long-Term Facility		
All in Rate	3.92%	The City & EY benchmarks
Option 2 - Outsourcing		
Gearing Rate	85.00%	Market Comparables
Bank: Long-Term Facility		
All in Rate	4.68%	The City & EY benchmarks
Upfront Fee	0.50%	EY benchmark – Based on precedent projects closed during COVID- 19
Commitment Fee	0.54%	EY benchmark – Based on precedent projects closed during COVID- 19
Equity		
Equity Return	12.00%	EY benchmark – Based on precedent projects closed during COVID- 19
Letter of Credit Fee	2.00%	EY benchmark – Based on precedent projects closed during COVID- 19

#### Table 34: Financing Assumptions

#### 6.7.1 All-In Rate

The all-in rate is calculated as the sum of the base rate, the spread and the buffer.

The all-in rate for expansion is 3.92% and is inclusive of The City's interest rate contingency (base rate buffer).

The all-in rate used in the outsourcing option to calculate the private sector's cost of long-term borrowing in the preliminary project option analysis is 4.68%.

Variability in all-in rates is attributable to the risk profiles attributed to private sector borrowers and The City. Each unique borrower would have a varying degree of perceived risk that lenders factor into the credit spread when negotiating lending agreements. This difference in perceived risk profiles is evidenced in the higher credit spread for the private sector in option 2 (outsourcing).

Overall, the all-in rate of 4.68% used for the purposes of the outsourcing option analysis is reflective of market conditions and trends, is aligned with precedent projects and includes a conservative buffer to ensure the appropriateness of the rate.

#### 6.7.2 Base Rate

The base rate for expansion is provided by The City and is reflective of the rate that the Province would borrow funds through a structured bank facility and then lend to The City for the Project, based on the proposed cash flows in the model.

The outsourcing option long-term debt base rate is provided by The City and is reflective of a structured bank facility expected to be secured by the private sector in option 2.

A sensitivity analysis is included in the Sensitivity Analysis section below that examines the impact of base rates increasing and decreasing by 100 basis points ("bps") option 2.

#### 6.7.3 Rate Spread

The spread is the incremental cost of capital above the risk-free rate for long-term borrowing. Increasing market experience and comfort with project risks are reflected in the narrowing spreads seen in the market.

The City has included a rate spread on the expansion option and market precedent projects suggest the inclusion of a spread for the outsourcing option.

#### 6.7.4 Base Rate Buffer

In addition to the rate spread, a conservative buffer of 0.5% was used for the long-term debt. The buffer is generally set anywhere between 0% and 0.5%. The higher buffer was added to provide a conservative estimate and to account for the recent volatility in the market.

#### 6.7.5 Upfront and Commitment Fee

An upfront fee and commitment fee has been included in the outsourcing option to reflect the cost of financing for the private sector based on precedent projects across Canada.

The upfront fee is a one-time fee charged to the borrower of the loan.

The commitment fee is a rate that is applied to any undrawn, but committed, amounts borrowed. The rate charged is less than the interest rate and is charged because the lender has secured and set aside the financing for the borrower's project. The commitment fee is only applicable during the draw down period (i.e., the construction period) and is not applied during the loan repayment period.

### 6.8 Net Present Value Comparison

The NPV analysis involves a detailed quantitative investigation to establish which option provides the best value for The City. In accordance with generally accepted practice both in Canada and globally the methodology for the comparison has been based on discounted cash flow ("DCF") analysis. This involves establishing a period by period cash-flow profile for each of the options on a "like for like" basis (i.e., assuming consistent timeline, specifications, performance standards, etc.).

These cash-flow profiles are then adjusted for the time value of money by discounting them (using an appropriate discount rate) to provide an NPV for each option. The NPV is then adjusted for any other key differentials between the options. The NPV was calculated as the sum of the NPV of all the costs of each of the options during the design and construction phases, including all relevant financing costs, as well as the operating phase. The NPV of the project options were then compared to calculate the optimal solution for The City as follows:

#### Net Present Value Comparison = NPV expansion - NPV outsourcing

All values in this section are listed in NPV terms as per best practice.

#### 6.8.1 NPV Results

A summary of each option's NPV is provided in the table below.

Net Present Value – Financial Case Assessment - Summary Results					
Costs (\$m)	Option 1 – Expansion	Option 2A – Outsourcing with Composting	Option 2B – Outsourcing with AD		
Operating Costs	(149.71)	(128.39)	(208.15)		
Financing Costs	(52.58)	(60.71)	(72.76)		
Capital Costs	(46.48)	(48.74)	(58.48)		
Net Project Costs	(248.78)	(237.84)	(339.40)		
Capital Funding Sources	46.48	48.83	58.48		
Revenue	56.41	4.15	53.85		
Total Project Costs*	(145.88)	(184.86)	(227.06)		
Difference to Option 1		(38.98)	(81.17)		
NPV Rate per Tonne (60,000 tonnes)	(97.26)	(123.24)	(151.37)		

#### Table 35: Net Present Value Summary Results

\* Table values may not add precisely to the totals due to rounding.

Under the base case assumptions outlined in the Sections above, the expansion option is advantageous for The City and drives the better NPV regardless of if the private sector processing organic waste material using composting or AD technology. Expected savings for option 1 when compared to option 2A are 21%, or \$38.98 million (NPV), and 36%, or \$81.17 million (NPV), when compared to option 2B.

### 6.9 Sensitivity Analysis

A sensitivity analysis of the financial analysis results was undertaken in order to understand how key variables including the discount rate, inflation rate and other factors impact the NPVs achieved by the Project options. The results of the sensitivity analysis set out below demonstrate the preliminary analysis is robust to reasonable changes in key assumptions.

#### 6.9.1 Capital Cost Sensitivity

The robustness of the financial analysis results against changes in capital costs was tested with the results shown below.

#### Table 36: Sensitivity of Results to Capital Costs

		NPV Cos	t Savings	Savings	
Capital Cost Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs. (Optic	. Outsourcing on 2B)	
Net Present Value (\$m)	\$m	%	\$m	%	
Increase expansion capital costs by 30%	(23.20)	12.6%	(65.40)	28.8%	
Base case	(38.98)	21.1%	(81.17)	35.7%	
Decrease expansion capital costs by 5%	(41.61)	22.5%	(83.80)	36.9%	

Table 36 indicates that increasing the expansion capital costs by 30% reduces the net project cost savings to \$23.20 million, or 13%, when compared to the outsourcing option. Under the scenario where expansion budgeted expenditures decrease, the expansion option drives greater cost savings for The City.

In comparing expansion and outsourcing with the application of AD technologies, the results indicate that a reduction in expansion capital costs will improve the cost savings for facility expansion and an increase in expansion cost would have the opposite impact.

#### 6.9.2 Operating Cost Sensitivity

A sensitivity analysis was also conducted on the operating costs of both options to test the robustness of the analysis. The results are included in the table below.

#### Table 37: Sensitivity of Results to Operating Costs

	NPV Cost Savings				
Operating Cost Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs (Optio	. Outsourcing on 2B)	
Net Present Value (\$m)	\$m	%	\$m	%	
Increase expansion operating costs by 10%	(23.75)	12.8%	(65.94)	29.0%	
Base case	(38.98)	21.1%	(81.17)	35.7%	
Increase outsourcing operating cost per tonne by 10%	(52.32)	26.4%	(101.99)	41.1%	

The operating cost sensitivity for the expansion option compared to option 2A indicates that if expansion operating costs increase by 10%, all else the same, the cost savings to The City is reduced by approximately \$15 million over the 25-year operating term. Similarly, if outsourcing costs decreased, the expansion costs savings would decrease.

Similarly, when comparing the expansion option and option 2B, an increase in expansion operating costs by 10% will reduce the realized project cost savings by approximately \$15 million. Conversely, increasing the outsourcing operating costs by 10% increases the realized project cost savings by approximately \$21 million, improving the relative financial benefit of the expansion case. Similar impacts will occur if expansion operating costs decreased.

#### 6.9.3 Revenue Sensitivity

The financial analysis results were also tested for robustness by varying the revenue inputs for the expansion option. The results are below.

#### Table 38: Sensitivity of Results to Expansion Revenues (Option 2A)

RNG Production Sensitivity	NPV Cost Savings for Expansion vs Outsourcing (Option 2A)	
Net Present Value (\$m)	\$m	%
Expansion decrease in Rate by 25% per GJ	(24.28)	13.1%
Expansion decrease in RNG production by 25%	(24.88)	13.5%
Base case	(38.98)	21.1%

#### Table 39: Sensitivity of Results to Expansion Revenues (Option 2B)

RNG Production Sensitivity	NPV Cost Savings for Expansion vs Outsourcing (Option 2B)		
Net Present Value (\$m)	\$m %		
Decrease in RNG production by 25% - Expansion	(67.07)	29.5%	
Decrease in Rate by 25% per GJ	(80.51)	35.7%	
Base case	(81.17)	35.7%	
Decrease in RNG production by 25% - Outsource	(94.64)	39.3%	

The financial model estimates AD RNG revenue based on similar market comparable projects as provided by Jacobs. These estimates are based on the best available information at the time this Business Case was drafted and are believed to be conservative; however, the production and cost rates are not guaranteed. A sensitivity analysis has been conducted to evaluate the robustness of the base case results when subject to changes in revenue inputs.

The sensitivity analysis indicates that a decrease in RNG production or rates, significantly reduces the cost savings for expansion when compared with option 2A. If both a decrease in production by 25% and rates by 25% were to occur at the same time, the spread between options would decrease further. Conversely, any increase in production or rates would increase the cost savings for The City. It is noted, however, that once a rate is secured through a purchase agreement, the likelihood of rate fluctuation is low.

For the option 1 and option 2B comparison, the reduction in savings is limited as both options can be affected by the changes. As such, the outputs from the analysis are not materially changed as a result of RNG rate and production fluctuations.

#### Table 40: Sensitivity of Results to Outsourcing Revenues (Option 2A)

Outsourcing Revenue Sensitivity	NPV Cost Savings for Expansion vs Outsourcing (Option 2A)		
Net Present Value (\$m)	\$m	%	
Outsourcing compost revenue increase by 25%	(37.94)	20.6%	
Base case	(38.98)	21.1%	

The sensitivity analysis indicates that the higher the revenues the private sector is able to generate from the sale of finished compost, or other sources, in the outsourcing option, the lower the benefit and cost savings are for the expansion option. That said, the fluctuations tested in this sensitivity analysis are not material.

The base case assumes that approximately 54,000 tonnes of compost can be sold at \$5 per tonne. The sensitivity of increased revenues contemplates a 25% premium on composting rates which would result in increased revenues.

#### 6.9.4 Discount Rate Sensitivity

The discount rate used for the options analysis is intended to reflect the rate of borrowing for The City (Province of Alberta indicative 25-year rate). As this rate continually fluctuates, a sensitivity analysis was conducted with the results summarized below. The changes in discount rates have been applied to both scenarios.

Table 41: Sensitivity of Results to Discount Rates

	NPV Cost Savings			
Discount Rate Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs (Optio	. Outsourcing on 2B)
Net Present Value (\$m)	\$m	%	\$m	%
Increase discount rate by 0.5%	(36.33)	22.3%	(74.68)	35.8%
Base case	(38.98)	21.1%	(81.17)	35.7%
Decrease discount rate by 0.5%	(41.87)	20.9%	(88.37)	35.7%

The results indicate that the optimal solution for The City does not materially change with an increase or decrease in the discount rate of up to 0.5%. That said, a lower discount rate further improves the cost savings for the expansion option when compared against outsourcing due to the timing of cash flows.

#### 6.9.5 Interest Rate Sensitivity

The purpose of the interest rate sensitivity is to understand the degree to which interest rates can impact on the results of the analysis.

Table 42: Sensitivity of Results to Interest Rates

	NPV Cost Savings			
Interest Rate Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs (Optio	. Outsourcing on 2B)
Net Present Value (\$m)	\$m	%	\$m	%
Outsource credit spread decrease of 100 bps	(38.44)	20.9%	(80.53)	35.6%
Base case	(38.98)	21.1%	(81.17)	35.7%
Outsource credit spread increase of 100 bps	(39.52)	21.3%	(81.82)	35.9%

The results included in the table above indicate that the results are not materially sensitive to option 2A or option 2B interest rate fluctuations of up to 1%. If the outsourcing all-in rate increases, the cost savings for expansion are slightly higher because the cost of financing for the private sector has increased relative to the Province's rates. If outsourcing rates decrease, the expansion option cost savings are marginally reduced because the cost of financing is lower for the private sector.

#### 6.9.6 Inflation Rate Sensitivity

A sensitivity analysis was run on the inflation rates included in the model to capture the uncertainty of the impact on costs of the COVID-19 pandemic and the level of precision included in the cost estimates provided by

Jacobs. Using a higher inflation rate results in additional total construction and operation costs for all scenarios. A lower, or no, inflation rate reduces total Project costs in the year in which they are incurred for all scenarios.

The table below summarizes the net cost savings when two options are compared. As costs continue to be subject to a discount rate, the timing of when costs are incurred impacts the values included in the table below (i.e., overall project costs may be lower due to a lower inflation rate, however the net cost savings between options may increase or decrease in dollars or percentages, irrespective of the project costs).

Overall, both scenarios included in the table below, indicate that reasonable fluctuations in inflation rates, will not materially change the spread (i.e., cost savings) between options.

	NPV Cost Savings				
Inflation Rate Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs (Optio	. Outsourcing on 2B)	
Net Present Value (\$m)	\$m	%	\$m	%	
Base case	(38.98)	21.1%	(81.17)	35.7%	
Increase inflation rate by 1.0%	(43.60)	20.7%	(101.40)	39.2%	
Decrease inflation rate to 0.0%	(45.66)	31.4%	(64.23)	39.2%	

Table 43: Sensitivity of Results to Inflation Rates

#### 6.9.7 Construction Timing Sensitivity

Construction timing is a sensitivity run on the expansion option as there is an immediate need for additional processing capacity. The outsourcing option has the advantage of leveraging the 20,000 tonnes of processing capacity in the market effective immediately which is captured in the financial analysis as a cost saving in the event that it is advantageous for The City to do so. As such, it is important to test how the expansion option would be impacted if the construction timeline was reduced from the forecasted 36-month period or delayed.

#### Table 44: Sensitivity of Results to Construction Timing

Expansion Construction Timeline	NPV Cost Savings				
Sensitivity	Expansion vs Outsourcing (Option 2A)		Expansion vs (Optio	. Outsourcing on 2B)	
Net Present Value (\$m)	\$m	%	\$m	%	
Expansion Construction Timeline Delayed by 2 months	(38.74)	21.0%	(80.94)	35.6%	
Base case	(38.98)	21.1%	(81.17)	35.7%	
Expansion Construction Timeline Decreased to 18 months	(40.98)	22.2%	(83.17)	36.6%	

As indicated by the results in the table above, if the timeline is shortened to 18 months, the expansion option becomes more beneficial for The City from a financial investment position as cost savings increase. Further, there is qualitative benefits as excess amounts are able to be processed within capacity limits sooner than anticipated.

If there were construction delays of two (2) months in the expansion option, but not with outsourcing, the financial savings for The City would not materially change. A delay would result in some cost savings due to a greater discounting of costs which results in slightly greater cost savings, when compared to the base case. These cost savings are not, however, reflective of the additional costs that would be incurred at the existing facility if it is required to continue processing excess amounts of organic waste above its current capacity.

#### 6.9.8 Financial Analysis Robustness

Based on the sensitivity tests conducted, the financial analysis appears sufficiently robust against the assumptions included in the financial model. The assumptions are based on The City's best available information and estimates and has been validated, where appropriate, through market feedback.

### **6.10 Summary of Financial Analysis Outcomes**

The NPV cost per tonne has been calculated as:

- Option 1 (expansion): \$97.26
- ▶ Option 2A (outsourcing with composting): \$123.24
- ▶ Option 2B (outsourcing with AD): \$151.37

In nominal amounts, the opening year (2025) tipping fee is calculated at \$71.37, \$168.95 and \$182.21 per tonne for option 1, option 2A and option 2B, respectively. Market sounding participants provided an estimated range for processing tipping fees between \$55 and \$155 per tonne. Escalated to nominal amounts, the range is \$59.53 and \$167.78 per tonne. Therefore, the rates calculated as part of the financial analysis are generally aligned with market sounding participant estimates. Option 2 rates have been calculated as slightly higher than market sounding participant estimates due to a number of factors, including:

- Market participants had limited information available and provided estimates without conducting any analysis
- Market participants may not have included estimates for a return on investment resulting in a lower rate per tonne
- Participants may not have considered full construction of both a processing facility and transfer station, dependent on their current operations. The average tipping fee anticipated by participants with hauling experience was \$20 per tonne to transport from a transfer station to a processing facility. Participants noted that tipping fee pricing would be negotiable on long-term contracts and a contract with minimum tonnages
- Option 2B (outsourcing with AD) costs were not specifically estimated by market sounding participants as the focus of discussions was a composting opportunity. Consideration for higher capital costs may have impacted the ranges provided.

Overall, the quantitative financial analysis indicates that the expansion option is expected to drive better value for The City over the outsourcing option in the base case. The analysis indicates a material saving over the outsourcing option, even with conservative assumptions, and is robust to most sensitivity analyses with the exceptions noted in Section 6.9.9.

While the expansion option requires higher upfront capital investment when compared to the outsourcing option, there are lower ongoing operating costs for expansion.

Given the existing and available information, the financial analysis results indicate that the expansion option provides better value for money for the procurement of the Project and better value to Calgarians.

# 7. Deliverability and Operations Case Assessment

The deliverability and operations case qualitatively assesses the options against factors and risks related to delivery and operations from The City's perspective. Each of the options were assessed with respect to the key considerations or challenges (e.g., resourcing, feedstock, flexibility, etc.) and risks related to the current and future SSO processing needs of The City.

The deliverability and operational considerations and risks to The City would not differ under options 2A and 2B. As such, the assessment was undertaken to compare the comparative impacts of option 1 (expansion) and option 2 (outsourcing).

### 7.1 Deliverability and Operations Case Qualitative Assessment Approach

The methodology used for the qualitative assessment of delivery and operational considerations is as follows:

- Identifying risks pertinent to the proposed Project, as well as to The City's strategic goals and objectives for the potential deliverability and operation of the proposed expansion or outsourcing opportunity. The risks included were adapted from information provided by The City, industry templates and projects of a similar size, scope or asset class. Risks were categorized as:
  - Strategic
  - Permitting
  - Design and Construction
  - Operational
  - Technology Related
  - Other
- Qualitative assessment of each risk to determine the likelihood of the identified risks occurring and potential impact of these events, should they occur. The probabilities were ranked as high, medium or low likelihood of occurrence and the impacts were ranked as high, medium or low impact on The City

#### Figure 10: Risk Assessment Approach



The probability and potential impact of risks associated with each option were assessed to determine the option with the lowest potential risk to The City. This information will be combined with other qualitative deliverability and operations factors to inform a decision on Project options.

### 7.2 Definition of Deliverability and Operations Risks

Identified risks are defined in the table below. The risks were identified based on the initial risk assessment undertaken by Jacobs, and further deliverability and operations factors and inputs based on precedent waste sector projects and based on EY's experience.

Table 45: Definition of Deliverability and Operations Risks

Risk #	Risk Name	Risk Description				
Strategi	ic Risks					
1	Optimal Long-Term Solution	Risk that the expansion or outsourcing options are not the most efficient long-term solutions and a more efficient or larger scale opportunity has not been considered.				
Permitt	ing and Approvals Risks					
2	Permitting	Risk that The City and the private partner is not able to secure permits in a timely manner, delaying design and construction or the issue of contracts.				
Designa	and Construction Risks					
3	Construction Costs	Risk that construction costs will be higher due to necessity of immediate additional capacity, limited access to specialized trades, higher inflation or other factors.				
Operati	onal Risks					
4	Operating Costs	Risk that operating costs will be higher than anticipated due to higher tonnage amounts, additional administration costs, energy management challenges, higher inflation or other factors.				
5 Tonnage Amounts		Risk that tonnage is higher than forecasted or exceeds 60,000 during the life of the asset (25 years) and amount forecasts will be inaccurate across the long-term.				
6	Availability of New Capacity	Risk that the timing of construction for a new facility is delayed and The City incurs additional costs for processing excess capacity.				
7	Facility Closure or Poor Performance	Risk that a facility is shut down or closed risking the delivery of Green Cart services to residents and increasing costs to The City.				
8 Haulage and Transportation		Risk that transportation of materials from the transfer facility results in delays or additional costs to The City (e.g., weather related incidents, road blockages, catastrophic events)				
Techno	logy Related Risks					
9	Revenue	Risk that revenues are less than anticipated for The City, increasing costs to The City or end product output (i.e., compost) competition increases, reducing revenue at the existing facility.				
10	Environmental	Risk that The City will not have control over environmental impacts, including odour compliance.				
Other R	lisks					
11	Contract Management	Risk that the capacity of the existing team is insufficient to manage multiple contracts requiring additional staff. Risk contracts are not sufficiently managed resulting in poor contract performance, damages or legal costs.				
12	Reputational	Risk that commitments and compliance requirements are not met by private partners negatively impacting The City's reputation by association.				

### 7.3 Assessment of Deliverability and Operations Risks

The risks were assessed based on factors of probability and impact. Probability was defined as the likelihood of occurrence. The probability was ranked on a scale as follows:

- ▶ Low: The risk is unlikely to occur
- Medium: The risk could occur
- ▶ High: The risk is likely to occur

The potential impact was gauged as the potential financial and political impact on The City should the risk occur. The impact was ranked on the scale outlined below:

- Low: Minimal impact on The City
- Medium: Manageable impact on The City
- ▶ High: Severe impact on The City

Aligned with the financial model, the qualitative risk assessment assumed that both project options would have the same construction schedule and a 25-year operating period. It was also assumed that the option 2A (outsourcing with composting) would include a new facility outside of the City of Calgary while option 2B (outsourcing with AD) assumes a new facility within City limits.

### 7.4 Deliverability and Operations Risk Assessment Summary

Risks within each category and the categories themselves, were developed based on work conducted to date, market sounding feedback, information provided by The City (including qualitative risk analyses performed by Jacobs) and precedent projects.

The risks were assessed using the following methodology:

- ▶ Risk Identification: Ensuring a complete list of all risk categories
- ▶ Risk Likelihood: Estimating the likelihood (high, medium, low) of each risk occurring
- ▶ Risk Impact: Estimating the potential impact on The City (high, medium, low) of each risk, should it occur

The final qualitative risk matrix (table below) presents a "heat map" which provides a visual representation of the risks of greatest concern to The City for each option. The identified risks were defined and presented to The City in draft format (preliminary options assessment outputs) and subject to review and comments. Feedback from The City was incorporated in the final assessment of qualitative risks and in the identification of other factors for consideration. Detailed explanations and mitigation strategies are included in Appendix C.

#### Table 46: Qualitative Risk Matrix

Qual	itative Risk	Option 1 Expansion		Option 2 Outsourcing		
No.	Risk	Prob	Impact	Prob	Impact	
Strat	egic Risks					
1	Optimal Long-Term Solution	Low	Medium	Low	High	
Perm	itting					
2	Permitting	Low	Low	Low	Medium	
Desig	n and Construction Risks					
3	Construction Costs	Low	Medium	Low	Low	
Operational Risks						
4	Operating Costs	Low	Medium	Low	Low	
5	Tonnage Amounts	High	High	High	Medium	
6	Availability of New Capacity	Medium	Low	Medium	Medium	
7	Facility Closure or Poor Performance	Low	Medium	Low	High	
8	Haulage and Transportation	Low	Low	Low	Medium	
Tech	nology Related Risks					
9	Revenue	Medium	High	Low	Low	
10	Environmental	Low	Low	Low	Medium	
Othe	r Risks					
11	Contract Management	Low	Low	Medium	Low	
12	Reputational	Low	Low	Low	High	

Based on the results of the qualitative risk assessment, the expansion option provides a marginally lower risk amongst the Project options, with fewer high impact risks, however both options have similar risk profiles.

### 7.5 Additional Deliverability and Operations Considerations

In addition to the qualitative risk assessment noted above, a few factors were noted for further consideration based on jurisdictional review and market sounding findings, and in discussion with The City. These items were not assessed, but rather represent items for further review or attention in implementation of the preferred option.

- Ability of internal capacity to deliver: In consideration of the options, The City should consider its internal capacity and capabilities, including resource availability and capacity to provide the long-term commitment to deliver the Project, i.e., processing excess capacity or management of contracts.
- Flexibility to change: It is expected that with changing demographics in The City, processing capacity needs, amounts and composition will change over time. It is also expected that there will be regulatory, policy or programmatic changes over time. The City should ensure that the selected option provides a degree of flexibility for nimble decision making and operational changes as required.
- Operational commencement: The City is currently processing excess capacity in the existing facility at additional operational cost. There is an immediate need for a solution to process excess capacity. The lead time and procurement period for the outsourcing option may be shorter, however, based on market sounding participant feedback, there is currently insufficient capacity in the regional Calgary market to process the proposed processing capacity requirement of up to an additional 60,000 tonnes per year. Additional capacity will need to be developed in the market through potential expansion or development projects. The analyses in this Business Case have assumed that both the expansion and outsourcing options would have similar time to operations.

# 8. Conclusions and Preferred Option

The table below summarizes the outcomes of the various assessments undertaken in developing this Business Case.

Table 47:	Summary	of Assessment	Outputs
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Assessment	Summary of Outputs							
	The jurisdictional review included a detailed review of five (5) jurisdictions that each selected a unique approach to outsourcing organic processing. The variation of approaches provides a better understanding of the risks and lessons learned that should be incorporated in the potential outsourcing option. The majority of jurisdictions included in the detailed review have outsourced organic waste processing as an immediate solution to meet their waste management goals and requirements to receive funding approval as both capacity and infrastructure exist in their respective local markets. The following high-level lessons were derived from the jurisdictional review for the procurement model with respect to the potential outsourcing option:							
Jurisdictional Review	Outsourcing organics is seen as an immediate solution to meeting the growing capacity demands. Consider the length of the agreement to reflect the degree of investment required from the private sector.							
	Allowance for multiple agreements with multiple parties (two (2) or more) to reduce the risk of over capacity to a supplier that may impact the environmental obligations.							
	Allowance for market innovation for various technologies and outputs as to not limit the market on the various technologies currently used.							
	Allowance to increase or decrease maximum and minimum processing capacity to allow for fluctuation in actual and forecasted organic waste tonnage.							
	Provide flexibility for changes in the allowable organic material to be processed.							
	Lessons learned from other jurisdictions can be applied if the preferred option for the City of Calgary is outsourcing, including information related to procurement and agreement structuring.							
	Generally, market sounding participants expressed interest in potential partnerships with The City. The following high-level lessons were derived from the market sounding with respect to the potential outsourcing option:							
	Currently, there is not sufficient capacity in the regional market to accommodate processing the required 60,000 tonnes of material per year.							
Market Sounding	Based on market sounding feedback provided, it is estimated that The City could anticipate outsourcing 10,000 to 20,000 tonnes per year immediately with multiple providers. These estimates were not further verified for accuracy. While capacity may be available, however, The City would need to follow its procurement policies to ensure potential suppliers meet specific requirements to be able to enter into a contract with The City.							
	Market sounding participants indicated that there is interest in expanding or building facilities to accommodate The City's excess SSO. The City could anticipate construction for an outsourcing contract of 60,000 additional tonnes to be completed within one (1) to two (2) years of contract award. Further, market sounding participants indicated that there are some new construction and expansion projects planned for the next 24 months on multiple facilities, however, available capacity at these sites is likely to be limited to the near term due to existing/future contracts.							

Assessment	Summary of Outputs
	To more quickly respond to current demand, other municipalities have engaged with and contracted organizations to process SSO while their facility is being built or expanded, subject to available local capacity.
	Participants articulated the importance of a circular economy which included:
	<ul> <li>Maximizing the useful life of resources;</li> </ul>
	<ul> <li>Reducing reliance on non-renewable resources;</li> </ul>
	<ul> <li>Reducing the carbon footprint and limiting environmental impacts;</li> </ul>
	<ul> <li>Regenerating natural systems; and</li> </ul>
	Enhancing social outcomes and local economic development.
Strategic Case Assessment	Both options highly align with the strategic policies and objectives of The City as per the documents reviewed. Under the expansion option, The City could potentially realize additional benefits such as a positive reputational impact, cost stability, potential revenue sources, and support of the local and regional waste sector circular economy.
Economic Case Assessment	Investing in SSO capacity for The City will generate benefits for all residents through enhanced environmental, economic and societal outcomes. In conducting the cost benefit analysis (CBA), both quantitative (Government Financial Account) and qualitative factors were considered. Based on this CBA, the present value of the financial costs exceeded the financial benefits in the range of \$87 million to \$103 million for the expansion option, \$111 million to \$134 million for option 2A (outsourcing with composting), and \$127 million to \$153 million for option 2B (outsourcing with AD) (all values are in 2021 NPV terms). The key differentiator between the options is the RNG and by-product revenue stream unlocked under the expansion option through the application of HFPAD technology, which helps reduce the net cost burden on The City. The expansion option also benefits by not incurring additional transportation costs and by not having to construct a transfer facility. The expansion option also makes use of existing buildings and processing systems and eliminates the need for land purchase. In assessing qualitative measures related to the other MAE accounts, option 1 (expansion) provided a higher incremental benefit to The City.
Financial Case Assessment	Based on the financial analysis results, the expansion of the existing facility is expected to deliver better value to The City. Expected savings for option 1 (expansion) are 21%, or \$38.98 million (NPV), compared to option 2A (outsourcing with composting) and 36%, or \$81.17 million (NPV), compared to option 2B (outsourcing with AD).
Deliverability and Operations Case Assessment	As per the qualitative risk assessment, the expansion option provides a marginally lower risk amongst the Project options, with fewer high impact risks, however both options have similar risk profiles. In particular, the expansion option provides The City with greater control over operations (as a City-owned asset), and a high degree of flexibility with respect to potential changes in legislation/regulations, programmatic changes (i.e., Green Cart Program) and changing needs/uses for residents of The City.

### **8.1 Preferred Option**

Based on the outcomes of the above-noted assessments, the expansion option has been identified as the optimal solution for The City to process excess SSO capacity. As per feedback from market participants, the private sector in the regional Calgary market is unable to process the 60,000 tonnes required by The City with their existing facilities. With The City's forecasts for SSO processing amounts increasing over time, the expansion option provides an opportunity for The City to create and maintain control over additional processing capacity.

In terms of the strategic fit of expansion, the assessment indicates that option 1 (expansion) provides a high degree of alignment with The City's strategic policies and plans. The economic benefit of expansion is also assessed as superior to outsourcing opportunities across a range of accounts.

On a financial basis, the expansion option requires a higher upfront investment by The City when compared to the outsourcing options, but it delivers better value to The City over the long-term. Under option 2 (outsourcing), the private sector finances the construction of a new facility and The City only incurs an operating cost, reducing the upfront investment from The City.

Based on the results of the analyses, the most significant differentiator in the assessment was the higher potential for revenue from the sale of RNG under the expansion option as compared to the outsourcing option 2A (outsourcing with composting), as well as the capital costs of building both a transfer station and processing facility. The most significant cost difference for option 2B (outsourcing with AD) is the additional annual operating cost to process digestate compost following AD.

Overall, the assessments conducted indicate that a facility expansion is a better strategic, economic, and financial fit for The City and will drive better value for The City.

## Appendix A – Strategic Case Assessment

	JURISDICTION	PROCESSING FACILITY	OWNERSHIP	SSO CAPACITY (TONNES)	TECHNOLOGY
	Surrey	Organics Biofuel Processing Facility	City Owned - DBOM	115,000	Anaerobic
	Metro Vancouver	Arrow Transportation Systems Inc – Unsure if Arrow processes or if a separate processor is used (i.e., a partnership)	Privately Owned -	36,000	
	Pemberton	Pemberton Transfer Station – sent to Sea to Sky Soils	Privately Owned - Sea to Sky Soils		Gore Cover System
British Columbia	Pitt Meadows	2016 – 2018: Harvest Fraser Richmond Organics – processing services (shut down due to emission and compliance issues with Metro Vancouver)	Privately Owned - Harvest Fraser Richmond Organics	3,000	
	Nanaimo	Nanaimo Organic Waste (NOW) Facility	Privately Owned - Convertus	20,000 increasing to 40,000 upon completion of upgrades after securing 20-year contract	Tunneling: four in- vessel composting tunnels Upgraded air humidification and biofilter capacity for odour abatement
Alberta	Airdrie	Nutrient Recycling Center – Calgary	Privately Owned – GFL Environment	35,000	Unknown
AIDELIA	Edmonton	Organics Processing Facility	City Owned – Procurement Stage	100,000	Anaerobic
Saskatchewan	Regina	Pilot project began in September 2020 for 2,300 homes. Organics are compost at landfill.		Unknown	

	JURISDICTION PROCESSING FACILITY		OWNERSHIP	SSO CAPACITY (TONNES)	TECHNOLOGY
	Saskatoon	Organics Facility	Privately Owned – Loraas	~ 10,000	Aerobic
	Guelph	Organic Waste Processing Facility	City Owned - DBFOM	30,000	Aerobic
	London	Organic Composting Facility	Privately Owned - Convertus	150,000	Aerobic
	Ottawa	Organics Processing Facility	Privately Owned - Convertus	100,000	Aerobic
		Disco Road Organics Processing Facility	City Owned	75,000	Anaerobic
		Dufferin Organics Processing Facility	City Owned - DBO	55,000	Anaerobic
	Toronto	3 <sup>rd</sup> Party Contracts - RFP issued February 2021 to process 45,000 tonnes	Privately Owned	67,000	
		Planning phase for a 3 <sup>rd</sup> facility to commission in 2028	City Owned (\$130M)		Anaerobic
Ontario	Region of Durham	Mixed Waste Pre-sort and Anaerobic Digestion Facility (planning phase)	City Owned	110,000	Anaerobic
	Region of Niagara	Organic Composting Facility	Privately Owned - Walker Environmental Group	34,000	Aerobic
	Pagion of Page	Anaerobic Digestion Facility (plan to replace existing facility)	City Owned - DBOM	120,000	Anaerobic
	Region of Peer	Peel Integrated Waste Management Facility	City Owned	72,000	Aerobic
		Bio-En Power Anaerobic Digestion Facility	Privately Owned	10,000	Anaerobic
		London Organic Composting Facility	Privately Owned - Convertus	80,000	Aerobic
	Region of York	Moose Creek Soil Facility	Privately Owned – GFL Environmental	50,000	Aerobic
		Elmira Anaerobic Digestion Facility	Privately Owned – Cornerstone Renewables	10,000	Anaerobic

# Appendix B – Market Sounding Participant Listing

	Company	Location	Participated	Date Interviewed
$\boxtimes$	Carbon Clean Energy	Calgary	✓	28-May-21
2	Cattleland AD	Strathmore		Unavailable
3	Cleanit Greenit Composting System	Edmonton		Declined
4	Collective Waste Solutions	Calgary		Declined; Hauling services only
5	Earth Waste Management	Calgary		Declined; Hauling services only
6	GFL Environmental (Bio-Can)	Strathmore	$\checkmark$	28-May-21
7	Harvest Recycling	Calgary	$\checkmark$	20-May-21
8	Highwood Organics Processing	High River	$\checkmark$	19-May-21
9	Roseburn Ranches / EcoAg Initiatives	High River		No contact
10	Stoney Soil Products	Didsbury	$\checkmark$	25-May-21
11	Walker Environmental	Calgary	$\checkmark$	25-May-21
12	Waste Management (WM) Organic Recycling	Edmonton	$\checkmark$	25-May-21
13	ATCO Group	Edmonton	ü	12-August-21

# Appendix C – Project Risk Matrix

Qualitative Risk		Option 1: Expansion		Option 2: Outsourcing		Notes
No. Strat	Risk egic Risks	Prob	Impact	Prob	Impact	
1	Optimal Long-Term Solution	Low	Medium	Low	High	Both options have been shortlisted as viable opportunities that can achieve The City's long-term need of processing household organics. As such, both options have a low probability of the risk occurring. The expansion option has a medium impact. If the AD cannot optimally meet The City's long- term need it is expected that The City, as the owner, can pivot the solution to meet the needs more effectively. The outsourcing option may be more limited in pivoting should the new facilities not be the most efficient long-term solution. A long-term fixed contract will result in greater impact to The City (i.e., more costs) if changes are required or the decision is proven to be suboptimal.
Perm	itting Risks					
2	Permitting	Low	Low	Low	Medium	The City will be responsible for supporting the permitting process for the expansion option. The probability of delays due to permitting is low as the AD equipment will be added to the existing plot of land. If the risk occurs, the impact is expected to be low and resolved by The City. The outsourcing option has a low probability of permitting challenges occurring, however if the risk is to occur, longer delays in construction and greater impacts are expected as The City will not have as much influence due to the facilities being outside of the City of Calgary.
Desig	n and Construction Risks					
3	Construction Costs	Low	Medium	Low	Low	The construction costs estimates are preliminary at the time of the development of this Busines Case; however, estimates are expected to be refined through the design phase under either option resulting in a low probability of higher construction costs for both options. If construction costs were higher than anticipated for expansion, The City would be responsible to pay for the overruns. Therefore, the impact of this risk is moderate. The outsourcing option will include a fixed cost for tonnage which will include an amount for capital cost recovery. Depending on the outsource option contract timing, construction cost overruns would be absorbed by the private sector as the price per tonne would be fixed.
Oper	ational Risks					
4	Operating Costs	Low	Medium	Low	Low	Give The City's experience with operating its current facility, there is a low probability that there would be higher operating costs than expected unless tonnage amounts were significantly higher (discussed under Risk #5) or there were additional administration or energy management costs. If, however, operating costs were higher than forecasted, The City would be responsible for the additional costs resulting in a medium impact. Under the outsourcing option, the contract would require a fixed price per tonne. Therefore, are operating cost increases would be absorbed by the private sector and result in a low impact to The City.
5	Tonnage Amounts	High	High	High	Medium	Tonnage forecasts indicate amounts will exceed 60,000 tonnes in 2032. As such, there is a high probability that processing capacity may be exceeded under both options within the 25-year operating period.

	Mitigation Strategies
	To support the longevity of the decision, The City is conducting a Business Case. This will support decision making and mitigate risks given the available information. To mitigate the risk impact when outsourcing, The City should discuss the development of a new processing facility outside of the bounds of The City, potentially in collaboration with regional areas/municipalities to ensure no policy or other changes will impact operations.
	To mitigate the risk of permitting delays, The City should consult with internal departments and surrounding cities where a new processing facility may be built to ensure all required information is provided and all requirements are met in advance of submission to reduce delays in construction and operations.
5	To mitigate the risk of cost overruns, cost estimates should be further refined during the planning phase. This should include consideration for contingency and escalation.
/	To mitigate the risk of cost overruns, cost estimates should be further refined during the planning phase. This should include consideration for contingency and escalation. Further, The City should consider the potential of embedding a fixed operating cost into the existing facility operating contract to mitigate the risk of higher operating costs.
	To mitigate the risk of higher than forecasted waste amounts, The City should conduct an updated analysis for forecasts based on the availability of additional historic data. In

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#### CITY OF CALGARY | COMPOSTING FACILITY EXPANSION BUSINESS CASE

Qualitative Risk		Option 1: Expansion Option 2:		Option 2: O	outsourcing	Notes	Mitigation Strategies
No. Risk		Prob	Impact	Prob	Impact		
Strat	egic Risks					If tonnage amounts were higher, the impact on the expansion option would be high. Operation hours would need to increase, equipment would have higher usage and potentially shorter useful lives, increasing operating costs to The City. If tonnage amounts were higher when outsourcing, the impact is expected to be medium. Market sounding participants noted that the private partner would likely have excess capacity available to process the additional tonnage which reduces the impact to medium. The private sector is, however, expected to set a rate per tonne which will include an amount for capital cost recovery. This means that there is a risk The City would be paying a higher rate for tonnes that exceed original forecasts of 60,000. This risk can be mitigated through a negotiated payment mechanism based on anticipated amounts.	addition, where possible, contractual agreements under both options should consider the potential incremental costs for processing additional tonnage amounts (in excess of proposed 60,000 tonne maximum). This would result in a better understanding of potential cost overruns in the operating phase.
6	Availability of New Capacity	Medium	Low	Medium	Medium	Both expansion and outsourcing options have similar construction timelines that have a medium probability of being delayed based on external factors. In the event that the availability of new capacity is delayed, the expansion option will be less costly as the existing facility can continue to process the additional amounts. If the outsourcing option is delayed, the operator at the existing facility may increase processing costs as they are not included in the contract.	To mitigate the risk of delays, The City may be able to sign a contract under the outsourcing option that guarantees processing of waste starting at a specified date. If a new facility is not complete, this would require the partner to contract out to an existing facility with capacity or establish alternate solutions.
7	Facility Closure or Poor Performance	Low	Medium	Low	High	The risk of the facility being shut down or closed whether within or outside of the operator's control is low for both options. The impact, however, is higher when outsourcing because The City would need to set up alternative measures to support the removal of organic waste from households.	To reduce the risk of facility closure or poor performance, The City should conduct a thorough due diligence process, including reference checks, to ensure the longevity, experience and performance of a partner. Further, a payment mechanism could be implemented as part of the contract to incentivize strong performance. Lastly, a take back clause could give The City the security required should issues arise that jeopardize safety or wellbeing.
8	Haulage and Transport	Low	Low	Low	Medium	The risk of haulage or transportation issues is low for both scenarios. Some events, such as weather-related incidents, are expected. The impact if the risk occurs will be more significant on the outsourcing options due to the potential longer distance between households and the processing facility.	To reduce risks related to haulage or transportation, emergency alternative solutions should be developed for instances where The City or its partners are unable to access transfer stations or processing facilities. This could include the use of The City's facilities or another entity within city bounds.
Tech	nology Related Risks						
9	Revenue	Medium	High	Low	Low	The risk that revenues are less than anticipated for The City are moderate for expansion. A reduction in revenues would increase the net project costs to The City over the life of the asset. Therefore, the impact of the risk would be high as the NPV of the project would shift materially without forecasted revenues. The risk that competition would increase and reduce revenues at the existing facility if end product output (i.e., compost) was produced in the outsourcing option is low. Furthermore, if the risk occurred and compost sales decreased at the existing processing facility, the impact is expected to be low to the operator and minimal to The City. Further, if the option 2B (outsourcing with AD) revenue was lower than anticipated, the impact to The City would be low as there would be a contracted price per tonne. Therefore, any fluctuations in revenues would not impact the results of the analysis materially.	To reduce the risk of reduced revenues for The City, consultation with ATCO should occur in advance of development to ensure all mitigating strategies to avoid energy loss and generation downtime are in place. To mitigate the risk of competition for the sale of compost, depending on the location of the new processing facility, limitations could be added to the contract around specific clients or pricing to reduce competition.
#### CITY OF CALGARY | COMPOSTING FACILITY EXPANSION BUSINESS CASE

Qualitative Risk		Option 1: Expansion		Option 2: Outsourcing		Notes	Mitigation Strategies
No.	Risk	Prob	Impact	Prob	Impact		
Strat	egic Risks						
10	Environmental	Low	Low	Low	Medium	The risk of environmental impact and odour compliance is low for both options. The City abides by all requirements and any contracted third party would be mandated to do the same. If the risk were to occur, The City would take action to ensure compliance and the impact is expected to be low. The outsourcing option is expected to have a medium impact to The City. There are costs associated with reputation (discussed further, below) and a private partner may look to The City for financial contributions (through rate increases or alternative sources), ultimately costing The City more.	To mitigate this risk, The City can develop a payment mechanism that includes penalties for instances of non- compliance. This will incentivize action that is aligned with The City's goal and mandates.
Otho	vr Picke						
otile							
11	Contract Management	Low	Low	Medium	Low	The contract management risk is low for the expansion option as the existing contracts would be extended. Therefore, no heightened risks are introduced. If the risk were to occur, the impact is expected to be low as there is an operating relationship and matters would be dealt with efficiently. If the outsourcing option is selected, the probability of contract management risks occurring is medium because there will be new contracts to manage with new partners which brings uncertainty and opportunity for poor performance or additional costs. If the risk occurs, the impact is believed to be low because The City can hire additional resources or reallocate existing resources to support resolve any issues.	To mitigate contract management risks, The City should evaluate its existing staffing to determine if there is a need to hire new staff in advance of the contract delivery. Further, The City should ensure the RFP evaluation includes adequate due diligence for selecting a reputable company with strong credentials.
12	Reputational	Low	Low	Low	High	The risk of The City's reputation being negatively impacted as a result of operator's poor performance or business decisions is low in both scenarios because The City conducts a due diligence process and has a detailed procurement process. If the risk occurs under the expansion option, the assessed impact is low because of the existing relationship The City has with the facility operator and The City's retained control over operations. If the risk occurs when outsourcing, the risk is high because The City will not have the ability to influence the private sector to the same degree as it would under the expansion option. Further, the contract length would be long-term without opportunity for negotiation or re-tender increasing the impact of the risk.	To reduce reputational risks, additional due diligence processes, such as reference checks and credentials should be reviewed. Further, clauses can be included in the for- ownership takeback or contract termination in the event that actions occur that lead to or may lead to irreversible reputational damage.

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#### BYLAW NUMBER 11B2021

#### BEING A BYLAW TO AUTHORIZE THE CITY OF CALGARY TO INCUR INDEBTEDNESS IN THE TOTAL AMOUNT OF \$30 MILLION TO FINANCE THE CONSTRUCTION OF THE COMPOSTING FACILITY EXPANSION

WHEREAS Council of The City of Calgary ("Council") has reviewed report IP2022-0018 for the construction and financing of the expansion to the Calgary Composting Facility (the "Project") and directed Administration to take all steps necessary under the Composting Facility Project Agreement to exercise The City's right thereunder to expand the Calgary Composting Facility to accommodate an additional 60,000 tonnes per year of Single-Family Residential food and yard waste;

**AND WHEREAS** the construction of the Project has an estimated cost of \$50 million;

**AND WHEREAS** it is estimated that at least \$20 million of the cost of the Project will be funded through sources other than debenture borrowing;

**AND WHEREAS** Council has determined it is advisable to pass a bylaw pursuant to Sections 251 and 258 of the *Municipal Government Act* (R.S.A. 2000 c. M-26) (the "**MGA**") to authorize borrowing the sum of \$30 million from the Province of Alberta (the "**Province**"), or other available sources to finance the Project;

**AND WHEREAS** the estimated probable lifetime of the Project financed under this Bylaw is equal to, or in excess of, twenty-five (25) years;

**AND WHEREAS** the amount of the long term debt of The City of Calgary ("The City") as at 2020 December 31 is \$2,845 million with \$401 million being tax supported debt, \$214 million being self-sufficient tax supported debt and \$2,229 million being self-supported debt and no part of any principal or interest is in arrears, with the addition of the borrowing authorized hereby, The City is within its debt limit.

## NOW, THEREFORE, THE COUNCIL OF THE CITY OF CALGARY ENACTS AS FOLLOWS:

- 1. The proper officers of The City are hereby authorized to issue one or more debentures on behalf of The City to a maximum sum of \$30 million to finance the Project.
- 2. The City shall repay the indebtedness over a period not to exceed twenty-five (25) years, in full and in accordance with one or more of the following repayment structures:
  - a) in one installment of principal on the maturity date of the borrowing, and a series of installments of interest as and when due throughout the term of the borrowing (such installments being no less often than semi-annual);
  - b) in installments of principal and interest, as and when due, throughout the term of the borrowing (such installments being no less often than semi-annual); and

#### **BYLAW NUMBER**

- c) interest only installment payments followed by installments of principal and interest, as and when due under the terms of the borrowing (such installments being no less often than semi-annual).
- 3. The City will pay interest as and when required (but no less often than in semi-annual instalments), at an interest rate not exceeding 8.00% per annum.
- 4. The City shall charge user fees sufficient to pay the interest, principle, fees and deposits when due and as required on the indebtedness. In the event of any revenue deficiency, The City shall levy and raise municipal taxes sufficient to pay the indebtedness.
- 5. The indebtedness shall be contracted on the credit and security of The City.
- 6. The net amount borrowed under this Bylaw shall be applied only to the purposes specified by this Bylaw.
- 7. This Bylaw comes into force on the date it is passed.

READ A FIRST TIME THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021.

READ A SECOND TIME THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021.

READ A THIRD TIME THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021.

MAYOR SIGNED THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021.

CITY CLERK SIGNED THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021.

#### **Risk Summary**

The following risks aligned to The City of Calgary's Principal Corporate Risks have been identified and represent **current** and **important** key risks related to the recommendations in report IP2022-0018.

Principal Corporate Risk	Risk Area Description	Key Current Risk Response(s)	
Environmental	Processing of organics is regulated by Alberta Environment and Parks. All facilities must meet strict requirements to ensure environmental compliance is maintained. Non- compliance may cause disruption to collections, operations, and service delivery. Reducing overall emissions of The City is a key goal in the Climate Resilience Strategy.	<ul> <li>By expanding the facility and maintaining the partnership and agreement it has with AIM Environmental Group, The City can ensure environmental regulations are followed and any impacts to surrounding communities is minimized.</li> <li>The environmental credentials of the facility will be enhanced through the addition of a biogas refining component.</li> </ul>	
Financial	The affordability of the project could be impacted by scope, schedule, and cost uncertainty, which will evolve through detailed design and construction. Interest rate and available financing structures may impact cost of indebtedness incurred by The City.	<ul> <li>The City commissioned detailed Class 4 cost estimates to support a feasibility assessment of the expansion and the business case. These estimates will continue to be refined through design.</li> <li>By partnering with an industry leader to develop, build, and operate the gas upgrading facilities, The City can reduce the amount of debt financing required and the amount of exposure to fluctuations in the debt capital markets.</li> <li>Ongoing monitoring of market interest rates, market conditions and available financing structures, while maximizing the use of available fixed rate financing structures where possible.</li> </ul>	
Commodity	Operating cost forecasts include commodity price projections over an extend period that are subject to fluctuations in market pricing (merchant risk).	<ul> <li>The City will look to pursue a long-term fixed price contract with an industry leader for the marketing of the biogas to provide improved revenue and budget certainty during the operations period.</li> </ul>	

Principal Corporate Risk	Risk Area Description	Key Current Risk Response(s)
Re-contracting	The Project Agreement that exists between The City and the Project Company will expire in 2027.	• The City will develop a re-contracting strategy during the planning and delivery phases of the expansion for the operation of the facility following expiry of the Project Agreement.
Infrastructure	Excess material has required the facility to operate longer hours than intended, resulting in less time for regular maintenance and increasing the chance of early failure of the equipment.	<ul> <li>Additional capacity will bring the facility back to the original operations and lifecycle maintenance plan.</li> </ul>
Legal and Compliance	Adherence to procurement policies to ensure an open, fair, and transparent process.	<ul> <li>The Project Agreement which is in effect until the end of 2027 resulted from a Request for Proposals to Design, Build, and Operate the Composting Facility (RFP) which was open to four (4) prequalified Proponents. This was a competitive process in 2015 which contemplated the possibility of needing to modify the Facility once it was operational, including to provide for additional capacity. The recommendations are relying on the process incorporated in the RFP and agreed to in the Project Agreement with Project Co. for capital improvements to the Facility within the Operations, Maintenance and Rehabilitation Period (while Project Co. is operating the Facility) to achieve the expanded capacity.</li> <li>Article 11 of Project Agreement Schedule 18 provides that The City has the right to expand, improve or otherwise change the Facility and has the right to include additional quantities and types of materials to be accepted, processed, recovered, packaged, marketed, and shipped by the Facility during the Operations, Maintenance, and Rehabilitation period.</li> </ul>

Principal Corporate Risk	Risk Area Description	Key Current Risk Response(s)
Operations	Organics processing and the upgrading of biogas into renewable natural gas require specialized knowledge of the technologies, marketing, and sales specific to those markets.	<ul> <li>The Public-Private Partnership developed through the original Composting Facility has provided The City with an expert in the field of composting and anaerobic digestion.</li> <li>By partnering with another industry leader to construct and operate biogas upgrading, storage and transport systems, The City can transfer operational and market fluctuation risks to an experienced partner.</li> </ul>
Reputation	Maintaining uninterrupted service delivery of the Green Cart Program to Calgarians. Partnership risk.	<ul> <li>By expanding and continuing with the Public-Private Partnership developed with AIM Environmental Group, The City will ensure that the processing of the material collected through the Green Cart Program continues to meet the strict standards set by Alberta Environment and Parks.</li> <li>The City will look to partner with industry leaders who have proven experience and success in their fields of expertise to reduce risk of negative impacts to the economy, environment, and Calgarians.</li> </ul>

#### 2021 Citywide Growth Strategy Monitoring Report

#### **RECOMMENDATION(S):**

That the Infrastructure and Planning Committee recommends that Council direct Administration to bring a Citywide Growth Strategy Monitoring Report to the Infrastructure and Planning Committee no later than 2022 October.

#### HIGHLIGHTS

- This monitoring report provides Council and stakeholders with current citywide growthrelated information that will help inform upcoming growth decisions for the 2023-2026 service plan and budget cycle. It is an important monitoring function of the Citywide Growth Strategy.
- What does this mean to Calgarians? The report aims to establish a common context and information base that stakeholders, Council, and Administration can use to discuss growth and change matters.
- Why does this matter? By providing these data and associated analysis, it increases transparency ahead of key Citywide Growth Strategy investment decisions, expected later this year as part of the 2023-2026 service plan and budget cycle.
- Key growth trends noted in this report for the period 2021 January to September:
  - Industrial and residential development both showed positive signs of recovery from economic challenges presented by the COVID-19 pandemic.
  - o Industrial areas are performing well nationally but face competition regionally.
  - New applications for residential units increased 75 per cent over the same period of 2020.
- Current development trends will make the growth targets in Part 5 of the Municipal Development Plan difficult to achieve.
- In 2020 November, Council directed Administration through report PFC2020-0962 to bring a 2021 Growth Strategy Monitoring Report to Council through Priorities and Finance Committee no later than 2022 January.
- Strategic Alignment to Council's Citizen Priorities: A prosperous city
- Background and Previous Council Direction is included as Attachment 1.

#### DISCUSSION

The Growth Strategy Monitoring Report started as a tool to review the progress and status of the new communities approved in 2018, while also providing relevant market information. Since this time, it has grown to encompass the entire Citywide Growth Strategy which now includes industrial and established areas alongside new communities.

The Citywide Growth Strategy focuses on how to enable growth and development in Calgary. It seeks to retain investment and jobs in the city while achieving the policy objectives of the Municipal Development Plan and the Calgary Transportation Plan. The Citywide Growth Strategy Monitoring Report (Attachment 2), continues to provide market background for Calgary and growth and change data, financial information, and next steps for each component.

The citywide balance of growth has major implications for The City's climate mitigation, and adaption goals of the Climate Resilience Strategy. Deliberate balancing of growth and

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#### 2021 Citywide Growth Strategy Monitoring Report

investments is crucial to reducing greenhouse gas emissions to net zero by 2050, and reducing risks associated with climate-related hazards.

The information provided in Attachment 2 complements other City reporting on growth such as The City's *Suburban Residential Growth* report and the *Calgary & Region Economic Outlook* publication.

This report generally covers the period up to 2021 September and uses various inputs to assess each area. Market indicators are optimistic for 2022 and both industrial and residential areas are showing positive signs for future development.

#### Market Indicators Summary

- According to the Canadian Housing and Mortgage Corporation, housing starts in Calgary are up 57 per cent over the same period of 2020 and Calgary has an 82 per cent share of housing starts in the Calgary Census Metropolitan Area
- Building permit values are anticipated to reach \$4.8 billion in 2021, which is in line with the average for 2016-2019
- There are 312 new hectares subject to Development Agreements so far in 2021, an increase over 2019 and 2020, and similar to the volumes for 2017 and 2018

#### Industrial Areas Growth Summary

- According to Colliers International, from Q3 2020 to Q3 2021 Calgary saw 233,000 square feet of positive industrial absorption, and 229,000 square feet of new supply. As of September 2021, there is 4.6 million square feet of industrial development underway.
- Calgary compares favourably nationally with a rental rate of \$8.93 per square foot against markets such as Vancouver (\$15.50) and Toronto (\$11.73). Calgary also boasts a healthy 4.7 per cent rental vacancy rate. Competition from regional municipalities continues based on cost differentials. An increase of 10 million square feet in the regional supply is expected in 2022.

#### **Residential Summary**

A Civic Census was not completed in 2020 or 2021, so population data, along with other contextual data such as occupancy, ownership and rental figures are not available for this report. In its place, building permit data was analyzed and summarized. The COVID-19 pandemic created challenges for the development industry in terms of the supply chain and material price inflation.

- The data has shown a significant recovery in the housing market in 2021 when compared to the same period of 2020. As of September 2021, applications have been submitted for 9,821 residential units, a 75 per cent increase over the applications for 5,628 units in the same period of 2020.
- According to the Canadian Real Estate Association, Calgary has one of the more affordable metropolitan housing markets in Canada. A supply of diverse housing types in both new and established communities has contributed to this affordability.

#### New Communities Growth Summary

• There were 6,097 new units applied for from January to September of 2021, an increase of 70 per cent from the 3,584 units applied for in the same period of 2020. Of these units, 3,576 are either single or semi-detached houses.

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- Of the 14 communities approved in 2018, six now have occupied units, one has applied for building permits, three are approaching show home construction, and four are still at the Outline Plan stage.
- Compared to budget, the operational and capital spending was very low. This will be a factor for the upcoming budget cycle as the rate of growth is behind expectations and may have ongoing budgetary requirements.

#### Established Area Growth Summary

- There were 3,724 new units applied for in the first nine months of 2021, an 82 per cent increase compared to the 2,042 units applied for in the same period of 2020.
- Established area development in Calgary continues to favour the greater downtown and adjacent communities with 1,546, or 42 per cent, of new units occurring in these areas.
- New units also came from large redevelopment areas like Medicine Hill, University District, and the Harvest Hills redevelopment.

#### Municipal Development Plan/Calgary Transportation Plan Alignment

Calgary is seeing a more compact form of development in the new communities, however, the balanced growth targets identified in *Part 5 of the Municipal Development Plan* will remain difficult to achieve. The Balanced Growth Boundary is identified on *Map 1: Urban Structure in the Municipal Development Plan* and is the target area for 50 per cent of Calgary's population growth for the next 50-60 years. 2,236 units, or 36 per cent of new units, were applied for within the balanced growth boundary so far in 2021, and of those, 1,725 units came from multi-residential development. Multi-residential units typically have fewer people per household so 36 per cent of new units are likely to equate to an even smaller share of actual population growth. The balanced growth target is important because it reflects a number of desirable city-building goals, including a compact urban form that reduces the urban footprint, a city connected by active modes in order to reduce travel time and greenhouse gas emissions, and a city where vibrant communities offer places to live, work and recreate.

#### Conclusion

After a difficult 2020, a recovering economic environment has fostered positive outcomes for industrial and residential development. Industrial is competitive nationally, and residential has shown the largest annual increase in new units since 2014. However, 64 per cent of applications for new units were for areas outside the balanced growth boundary. While the final population impacts remain to seen, this development pattern will make the targets in *Part 5 of the Municipal Development Plan* difficult to achieve. Calgary continues to grow every year and having a Citywide Growth Strategy helps to ensure that this growth is socially, environmentally, and economically thoughtful.

## Preparing for Citywide Growth Strategy Investment Decision-Making as part of the 2023-2026 Service Plan and Budget Cycle

The data and analysis contained in this report is intended to inform stakeholders ahead of decision-making for the 2023-2026 service plan and budget cycle. For the first time, the Citywide Growth Strategy is prioritizing under a unified approach to growth that balances citywide needs with the needs of new community, established areas, and industrial areas. In making these recommendations, Administration employs a data driven approach that is informed by stakeholder engagement through several working groups. Knowing where the

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market has been, and where it is expected to go, helps to inform the Market Demand factor as part of the overall strategy.

#### STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)

- Public Engagement was undertaken
- Public Communication or Engagement was not required
- Public/Stakeholders were informed
- Stakeholder dialogue/relations were undertaken

Administration discussed the purpose, timelines, and overview of this report with multistakeholder Working Groups, including the New Community Working Group, the Established Area Growth and Change Strategy Advisory and Working Groups, and the Industrial Strategy Working Group.

#### **IMPLICATIONS**

#### Social

The focus of this report is primarily on growth; however, it also provides insight into the type of housing that is under development in Calgary. This will help to inform investment recommendations related to equity and social wellbeing as part of the Citywide Growth Strategy. This report will also help Council to make budget and servicing decisions in alignment with Section 2.3 of the Municipal Development Plan, Creating Great Communities.

#### Environmental

The information provided in this report will help Council to make informed citywide growth decisions in alignment with the Municipal Development Plan goal of a compact city; and also with Municipal Development Plan policy 5.2.5(b), which is to prioritize municipal capital infrastructure to support intensification of the Developed Areas. Alignment with the Municipal Development Plan, as well as the Climate Resilience Strategy, will help achieve emissions reductions.

#### Economic

The housing market and Gross Domestic Product have rebounded to pre-pandemic levels in 2021 as the economy recovered and housing demand increased. This momentum and the changing trends due to the COVID-19 pandemic should drive job growth, investor confidence, and economic opportunity.

#### **Service and Financial Implications**

#### No anticipated financial impact

Analysis in support of this report indicates that it is unlikely the city will achieve the anticipated amount of commercial, industrial, and residential development that was used as a basis in the One Calgary (2019-2022) service plan and budget creation. Capital and operating spending is well below the revised budgeted amounts for 2019-2021. Administration expects to bring data-

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based investment recommendations to Council late in 2022 to help support the development of the 2023-2026 service plans and budgets.

#### RISKS

There are several risks associated with this report:

- 1. Variable Rates of Growth While growth levels for 2021 are expected to rise back to prepandemic levels, there is uncertainty for the years ahead as new COVID-19 variants may continue to evolve and labour and supply chain issues may remain in the housing and construction industries. Additionally, with regional neighbours showing strong industrial growth, Calgary's ability to capture a growing market may be impacted if Calgary remains less financially competitive.
- 2. Capital and Operating Budgets There is increased demand for capital infrastructure dollars across the organization, because of downward pressure on revenue sources and increased funding uncertainty from other levels of government. There is also pressure to reduce capital and operating budgets even as the city continues to experience growth. Both factors may result in the reduction of the capital and operating budgets for growth areas.

#### ATTACHMENT(S)

- 1. Attachment 1 Background and Previous Council Direction
- 2. Attachment 2 2021 Citywide Growth Strategy Monitoring Report

General Manager/Director	Department	Approve/Consult/Inform
Stuart Dalgleish	Planning and Development	Approve
Carla Male	Chief Financial Office	Consult

#### **Department Circulation**

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# Background and Previous Council Direction

#### Context

An annual monitoring report on growth trends and related budget decisions is a key supporting element for the Citywide Growth Strategy and a part of the Monitoring and Reporting objectives identified in Part 5.3 of the Municipal Development Plan. The catalyst for the monitoring report was to report on the progress of the new communities, including the 14 approved in 2018, along with relevant housing market indicators. It has since grown to include industrial and established areas and all three together form the Citywide Growth Strategy.

The Citywide Growth Strategy was initiated to help enable growth in new communities, established areas, and industrial areas through prioritized City investments, process improvements, increased data sharing, and leveraged relationships with stakeholders. The Citywide Growth Strategy evolved from the Industry/City Work Plan, itself an effort to enable growth that arose following the approval of Off-site Levy Bylaw in 2016. Significant milestones in the Citywide Growth Strategy have included the prioritization of business cases for new community development in 2018 and 2020, the approval of the Established Area Growth and Change Strategy Phase 1 report and investment identification in 2020, and the approval of the Industrial Action Plan in 2021.

Looking ahead to the 2023-2026 service plan and budget cycle, Administration will bring forward growth investment recommendations for all three components, under the banner of the Citywide Growth Strategy. This integrated approach will rely upon growth trends and stakeholder feedback to deliver meaningful results.

Strategic growth investments balanced across the city are important because (1) investment in established areas is important to help communities with the impacts of population growth and change; (2) industrial development plays a key role in supporting a prosperous economy and fiscally sustainable city and well-timed growth-related investments in support of this sector are crucial; and (3) investment in new communities helps Calgary accommodate its growing population, supports housing choice and affordability, and sustains a strong housing sector.

By publicly reporting on these topics to Council and stakeholders, accountability and transparency for the Strategy are increased.

#### **Previous Council Direction**

This report is in response to the recommendation from report PFC2020-0962 adopted by Council on 2020 November 2. The recommendation stated that "that the Priorities and Finance

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Committee recommends that Council direct Administration to bring a Growth Strategy Monitoring Report to the Priorities and Finance Committee no later than 2022 January."

Additionally, PFC2020-0131, Notice of Motion – Identifying a Funding Source for Public Realm Improvements in Established Areas, included as part of its recommendation "That Administration report annually to Council through Priorities and Finance Committee on the status/balance, use and benefits of the dedicated funding stream for the Established Areas Growth Strategy through the Growth Monitoring Report." Details on the status of the funding stream can be found in the Established Area section of Attachment 2.

#### Citywide Growth Strategy

The table below provides details on Council direction since 2018 pertaining to the Citywide Growth Strategy. It is important to understand the foundation on which the Citywide Growth Strategy was built.

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DATE REPORT NUMBER		DIRECTION/DESCRIPTION		
6/21/2021	PFC2021- 0639	Council directed Administration to continue to work with stakeholders to explore and implement business-friendly refinements to improve the 2022 New Community Growth Strategy Business Case review process, and consider more significant changes to the Growth Management Overlay mechanism.		
3/22/2021	PUD2021- 0150	Council directed Administration to undertake the Citywide Growth Strategy: Industrial Action Plan as identified in Attachment 3, and report back to Council through the Priorities and Finance Committee no later than 2022 February.		
11/2/2020	PFC2020- 0962	Council received the 2020 Growth Strategy Monitoring Report and approved the recommendation to direct Administration to bring a Growth Strategy Monitoring Report to the Priorities and Finance Committee no later than 2022 January.		
5/25/2020	PFC2020- 0381	Council received the Established Area Growth and Change Strategy (EAGCS) 2020: Phase 1 Recommendations report and approved the recommendation to approve a capital budget request for Budget Id 481650 Public Realm (EAGCS) of \$11.7M in 2021 and \$18.3M in 2022, funded by the Established Area Investment Fund.		
2/3/2020	PUD2020- 0020	Through the Industry/City Workplan 2019 Year-End Report, Administration indicated that an Industrial Growth Strategy scoping report would be brought forward in Q3 of 2020. Through report C2020-0698 that deferred all reports due in Q3 and Q4 2020 at the discretion of the City Manager and the General Manager, the timing of the scoping report was adjusted to Q1 2021.		
11/18/2019	PFC2019- 1062	Council received the 2019 Growth Strategy Monitoring Report (PFC2019-1062) and directed Administration to complete a review of new community business cases in 2020. In recognition of The City's financial constraints at the time, Council directed a modified business case process as outlined in Council's recommendations 1-4.		

DATE REPORT NUMBER		DIRECTION/DESCRIPTION		
9/24/2018	PFC2018- 0891	Council directed Administration to undertake the Established Area Growth and Change Work and bring forward strategic actions across the Established Area that meaningfully support community growth, change and quality of life.		
2018 July 30	2018 July 30 PFC2018- 0678, C2018- 0900 Community Growth Strate recommended for approval by the Committee through PFC2018- Finance Committee also recommended for approval by the Committee through PFC2018- Finance Committee also recommended for approval by the Committee through PFC2018- Finance Committee also recommended for approval by the Council on 2018 July 30 for a per removals were accomplished the Community Growth Strategy – Removals Arising from PFC2014 An additional six new communits 30 through Council direction on 0900 New Community Growth Strategy – Review and Analysis Directed to			
3/19/2018	PFC2018- 0200	Council provided direction for a New Community Growth Strategy. Foundational to this work, Administration and Industry agreed on six principles that were developed together to guide the work, they are; 1) Collaborate 2) Incorporate a market oriented perspective 3) Advance new development 4) Establish an accountable processes 5) Cumulative impact considerations on capital and operating costs 6) Shared risk. Council also directed Administration to bring a report to Council with findings and recommendations toward the development of an Established Areas Growth Strategy, including funding and timing considerations, that complements the New Community Growth Strategy.		

## 2021 Citywide Growth Strategy Monitoring Report

2021 September

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## **Executive Summary**

#### Purpose

This monitoring report provides Council and stakeholders with current growth-related information that includes citywide market conditions and an update on indicators, financials, and current activity for the three components of the Citywide Growth Strategy – new communities, established areas, and industrial areas. Another objective of the monitoring report is to provide transparency and accountability based on commitments (City and developer) arising from new community growth decisions in 2018, established area decisions in 2020, and industrial decisions in 2021. The information presented in this report will inform upcoming 2022 growth decisions for the 2023-2026 service plan and budget cycle, and also provides comments on how The City is progressing toward meeting the growth policies within the <u>Municipal Development Plan, Part 5 City-wide Growth Strategy</u>.

#### Content

This monitoring report includes an overall Calgary market snapshot, and updated information on growth and change for the industrial, new community, and established areas. This document complements the information in the <u>Suburban Residential Growth Report 2021-2025</u> and <u>Monthly Lot Supply Report</u>. As a result of several factors and decisions, a municipal census has not been completed since 2019, and there are no plans to conduct a future municipal census. This means that some data is not available including Calgary's population, vacancies, vacancy rates, occupancy and other variables cannot be reported here as they typically would be. As was the case in 2020, building permit data was used to analyze and estimate growth across the city.

#### Period

The information in this report generally represents the period ending 2021 September. Any data sources that do not align with this period have been noted where applicable. Financial data is aligned with the One Calgary (2019-2022) service plans and budget cycle, beginning in 2019 January and including to the end of 2021 September.<sup>1</sup>

#### Conclusion

After a difficult 2020, a recovering economic environment has produced positive outcomes for industrial and residential development. Industrial is competitive nationally, and residential has shown the annual increase in new units since 2014. However, 64 per cent of applications for new units were in areas outside the balanced growth boundary. While the final population impacts remain to be seen, this development pattern will make the targets in *Part 5 of the Municipal Development Plan* difficult to achieve. There is currently between 15 and 20 years of serviced and funded land supply in new community areas. The diversity of housing choice and current supply of new housing have kept housing affordable in Calgary when compared to the national average and other major markets. The City should continue to make strategic policy and investment decisions that balance the targets of the *Municipal Development Plan* and the needs of Calgarians.

<sup>&</sup>lt;sup>1</sup> The One Calgary 2019-2022 Service Plans and Budget can be found <u>here</u>: Details on the Growth budgets can be found as part of One Calgary 2019-2022 Service Plans and Budgets (C2018-1158), Attachment 9 "Supplemental Information", pages 19-20 (operating budgets) and 146-148 (capital budgets).

## **Calgary Market Snapshot**

#### Summary

Strength in the housing market has been shown through the number of housing starts, value of building permits, and hectares of development agreements in the first nine months of 2021. These have increased notably over 2020 and returned to pre-pandemic levels. However, it is currently unknown if the housing market is compensating for the low levels of 2020, or if these volumes are sustainable into the future.

Housing starts in the City of Calgary and the Calgary Census Metropolitan Area have increased significantly so far in 2021 (Figure 1) with:

- 8,649 housing starts in the City of Calgary, an increase of 57 per cent when compared to 5,539 units over the same period of 2020; and
- 10,415 housing starts in the Calgary Metropolitan Area, up 61 per cent from the 6,461 units in the same period of 2020.

Building permit value is anticipated to reach \$4.8 billion in 2021 which would be in line with the average of \$4.6 billion for 2016 to 2019 (Figure 2), the year-to-date numbers for the City of Calgary include:

- a residential building permit value of \$2.7 billion; and
- a non-residential building permit value of \$1.7 billion.

Development agreements have also increased so far in 2021 with 312 hectares subject to Development Agreements (Figure 3). Comparisons to previous year's show that this is:

- an increase over the same period of 2019 (120 hectares) and 2020 (211 hectares); and
- similar number of hectares to the first nine months of 2017 (298 hectares) and 2018 (316 hectares).

In the past five years the number of hectares subject to development agreements has failed to reach the assumed 401-hectare average in the Off-site Levy Bylaw. This has resulted in a shortfall for some water infrastructure types.

According to the Canadian Real Estate Association, Calgary has one of the more affordable metropolitan housing markets in Canada. A continued supply of diverse housing types in both new communities and the established area has contributed to this affordability.









Contributing to the improvement of the housing market and additional signs of economic recovery from the challenges of the COVID-19 pandemic are:

- a forecasted gross domestic product of 4.2 per cent in 2021 (Figure 4);
- the price per barrel of oil increasing over the year and ending in September at \$59.66 USD for Western Canada Select, and \$71.65 USD for West Texas Intermediate (Figure 5); and
- Total employment increasing by 3.0 per cent and unemployment decreasing to 9.5 per cent.

Calgary's population estimate is 1,323,700 people as of 2021 April (Figure 6) with a forecasted increase of 1.3 per cent per year for 2022-2026 (Figure 6).





#### Figure 4: Real GDP Growth



Figure 5: Crude Oil Prices



#### Figure 6: Population Growth



## **Industrial Areas**

#### Introduction

In Calgary, industrial lands play a crucial role in supporting a prosperous economy. The industrial sector is an important source of jobs and is a critical contributor to Calgary's tax base. In the city there are nearly 7,000 hectares of industrial lands which represent approximately nine per cent of the total land area.

Calgary's strategic geographic location and its multimodal logistics network of air, rail, and highway transportation makes it a well-positioned inland port. Calgary is a goods-distribution hub for markets in Western Canada, the U.S. Pacific Northwest and beyond. Calgary has a large and growing labour force, offers high quality services and utilities, including transit, water and power networks, availability of vacant serviced industrial lands in multiple locations, with a range of parcel sizes and land use options, and a network of established and existing industrial businesses.

More information on the Industrial Strategy and the Industrial Action Plan can be found on the <u>Citywide</u> <u>Growth Strategy: Industrial</u> webpage.

#### Climate

Industrial properties in Calgary represent approximately 8 per cent of total citywide greenhouse gas emissions. While the potential for greenhouse gas reductions is large in absolute terms, it is small relative to other sectors. Utilizing vacant industrial lands within Calgary, rather than developing new lands at the city's edges, represents an opportunity to enable efficient and low-carbon transportation options while reducing consumption of natural assets that mitigate risks associated with climate change. Driving specific actions that will reduce emissions in industrial processes is generally beyond the scope of municipal jurisdiction; however, The City can act as an enabler to facilitate emissions reductions, particularly in building energy performance. For example, by improving energy performance standards in existing and new industrial facilities, cost neutral investments (i.e., those for which expenditures will be recovered through long-term energy savings) could reduce industrial emissions by 10 megatonnes by 2050 while reducing annual energy expenditures by \$176 million. Through the Climate Resilience Strategy Mitigation Action Plan, The City has committed to developing a program to support large industrial energy users, and this work is currently in the exploratory phase.

#### **Growth and Change**

Overall industrial activity in Calgary has been resilient through the current economic downturn. Nationally Calgary's industrial sector is well positioned for growth, however at the regional level Calgary is competition from surrounding municipalities.

Colliers International reported that the average industrial vacancy rate for Calgary and the surrounding area decreased from 7.6 per cent in Q3 2020 to 4.7 per cent in Q3 2021. By submarket (Map 1), the vacancy rate in Central Calgary was 3.4 per cent, 4.6 per cent in Southeast Calgary, 6.0 per cent in Northeast Calgary, and 5.7 per cent in Balzac. The national average was 1.5 per cent and comparable cities vacancy rates include Edmonton at 5.5 per cent, Vancouver at 0.5 per cent, and the Greater Toronto Area at 0.4 per cent.

In the third quarter of 2021, the average rental rate in Calgary was \$8.93 per square foot, which is comparable to the areas surrounding Calgary, which are \$8.95 per square foot. At the same time, the Vancouver market experienced a record high rate of \$15.50 per square foot while Greater Toronto Area recorded \$11.73 per square foot.

It is notable that Calgary's vacancy rate and competitive rental rates are making the city an attractive market for industrial developers who are exiting Vancouver and the Greater Toronto Area due to record low vacancy rates and higher rental rates. Calgary can take strategic actions to accommodate developers who are relocating.

Calgary currently has 2,994 hectares of vacant land of which 886 hectares are owned by the City of Calgary and 2,108 hectares are privately owned. As of Q3 2021 Calgary had a total inventory of nearly 138 million square feet of industrial space, an increase of 8 million square feet by Q3 2020 split between the three subsectors (Figure 7). By having an available supply of development ready City owned land for sale, The City was able to quickly facilitate 3.6 million new square feet of industrial development in Calgary.



Map 1: Calgary Industrial Subsectors

#### Figure 7: Calgary's Industrial Building Inventory by Submarket



Source: Colliers International

Over the past 15 years, the industrial market share of the municipalities surrounding Calgary has grown significantly (Figure 8). In Q3 2021, these municipalities had a total inventory of 15.5 million square feet of industrial space with 55 per cent of this space located in Balzac. It is forecasted that Balzac will surpass 10 million square feet in 2022. Calgary did see an increase in its five-year weighted average market share in 2021, rising from 37 per cent in 2020 to 57 per cent this year.

100%

80%

60%

40%

20%

0%



2010

Annual Change Region (millions, sgft)
Annual Change Calgary (millions, sqft)

2013

2015

2012

Calgary's 5 Year Weighted Average Share of Inventory Growth

2011

2016

2018 2019

2020

2017

Figure 8: Industrial Growth Calgary and Region

Source: Colliers International

2005 2006 2007 2008 2008

2004

#### **Growth Capacity**

2001 2002 2003

Over the past decade, the industrial market across Calgary has averaged just over 2 million square feet of positive absorption and over 2 million square feet of new supply annually. Despite the economic downturn, absorption of industrial land has been positive over the last year (over 233,000 square feet) with 229,000 square feet of new land supply added since Q3 of 2020.

In the third quarter of 2021, Calgary and the surrounding municipalities saw a significant amount of inventory under construction. There was 6.7 million square feet of industrial projects underway in the Calgary region, with 4.7 million square feet within the city boundary, primarily in the Southeast, and 1.9 million square feet in the Balzac area (Figure 9).

2

0



#### Figure 9: Industrial Projects Under Construction in Calgary Region (Total Square Feet) Q3, 2021

Source: Colliers International

#### **Financial Summary**

The City is actively investing in infrastructure and servicing that supports development in industrial areas. City-led upgrades to utility infrastructure and transportation networks have been done or are being planned in the North, Southeast, Central, and Southwest sectors. Lands that are serviced with good transportation networks, and reliable utilities facilitate timely land development. The City also invests in sustainable mobility options such as Bus Rapid Transit, cycling and pedestrian infrastructure to support climate-conscious options in accessing industrial areas for users and employees. This infrastructure is funded through a combination of City funding and Off-Site Levy contributions by developers.

In the past year The City has invested approximately \$186 million in capital transportation projects to support the industrial sector, with nearly \$20 million in ongoing projects scheduled for completion in 2022. Improvements include road upgrades, interchanges and intersection upgrades, and pedestrian and cycling access to industrial areas. Major improvements are notable in the Northeast and Southeast sectors, with lesser upgrades occuring and planned in various other industrial areas. Additional improvements in industrial areas citywide have included numerous road repaving projects, sidewalk repairs, signal reconstructions, and small-scale street improvements to improve traffic operations.

#### North

The City has several transportation and utility infrastructure improvements underway in the North and Northeast that will directly support industrial land uses:

- Airport Trail Phase 2 improvements at 19th St NE and at Barlow Trail and extended Airport Trail from 36th St NE to 60th St NE;
- Improved safety and traffic operations along Barlow Tr NE between 4 Av NE and Sunridge Blvd NE;
- A new multi-use pathway along Meridian Rd NE (adjacent to Barlow Tr) running from Centre Av to 28 St NE, and new cycling routes and pedestrian improvements along 28 St SE and 19 Av SE; and
- 144 Av N Storm Trunk and Outfall in the Keystone area provides stormwater servicing. This trunk started construction in 2021 and is expected to be completed by 2024 at a cost of \$20 million.

#### Southeast

Southeast sector improvements have centered around improved transit, pedestrian, and cyclist networks:

- Improvements for the 52 St SE Bus Rapid Transit include bus priority travel at intersections and additional pedestrian and pathway improvements; and
- Major intersection upgrades in 2022 at Glenmore Trail and 68 St SE to improve safety, access, and circulation. The 68 St SE pathway is also being extended to improve walking and cycling access.

#### Central

Improvements in the Central sector include:

- The Inglewood Sanitary Trunk upgrade and the current expansion of the Bonnybrook Wastewater Treatment Plant; and
- Transportation completed a new multi-use pathway along 42 Av SE from Stanley Park to 12 St SE.

#### Next Steps

On 2021 March 22, Council directed Administration to take clear actions to support the industrial sector by approving an Industrial Action Plan as part of the Citywide Growth Strategy: Industrial (PUD2021-0150). This included a list of actions to be taken over 2021-2022. Advancing this Action Plan can help increase Calgary's competitiveness and enable the development of Calgary's industrial lands.

The Industrial Action Plan is organized under five areas where The City can have influence:

- 1. Development-enabling regulatory improvements;
- 2. Identifying infrastructure and servicing investments in industrial areas;
- 3. Reducing cost for the industrial sector;
- 4. Positioning public lands in support of the industrial sector; and
- 5. Creating an enabling business environment to retain existing business and attract new industrial investors.

Administration, together with external stakeholders, are advancing 12 actions across these categories. A progress update on the Action Plan will come to Council in February 2022.

#### Conclusion

Calgary's industrial sector has grown through the COVID-19 economic downturn as economic and societal trends have changed and continues to be an important source of quality jobs and tax base. Strong demand for large bay warehouse and distribution spaces is expected to continue for the foreseeable future due to increased e-commerce trends.

With Canada's other major industrial markets experiencing record low vacancy rates, Calgary is in an ideal position to entice major industrial investors who are looking to relocate. However, municipalities surrounding Calgary have notable tax advantages, more cost-effective land prices, and lower development charges. Over the past decade, an increasing amount of the region's industrial market has located in Rocky View County. Balzac has increased its availability rate from 12 per cent in 2020 Q3 to 16 per cent in 2021 Q3 and has 1.9 million square feet under construction compared to Calgary's North subsector which has 172,000 square feet under construction.

## **New Communities**

#### Introduction

New communities are an important part of how Calgary grows, providing affordable and diverse housing choices for Calgarians on the city's edges. One of the key goals of the Citywide Growth Strategy: New Communities is to link infrastructure investment with land use and development approvals. This helps

ensure that new community growth is financially sustainable and aligns with the vision set out in the *Municipal Development Plan*.

These efforts aim to ensure that The City can fully support and invest in these new communities, not just in the short-term, but also once they are completed and established. The City's approach to these new communities is to ensure that they are compact and complete, provide a wide range of housing choices, mobility options, and amenities and services for future residents. The business case evaluation process, to be conducted again in 2022 ahead of the 2023-2026 budget decisions, helps ensure that investments in new communities are strategic, while supporting a healthy and competitive land market, working within The City's financial capacity in the short and long term, and maximizing efficiency.

#### Climate

Development of lands at the urban edge consumes open spaces and natural assets, including agricultural lands, and thereby increases risks to the city from climate change. This is balanced against the social and economic benefits and opportunities that come with new community growth. New communities tend to be predominantly low-density housing forms which have higher per unit greenhouse gas emissions intensity compared to medium- and high-density forms, are more automobile-dependent due to their physical location, and relatively less viable transit service and active modes opportunities. Due to this, new communities should include transit and other active transportation modes so that they are a mobility option for residents. As new communities continue to be approved, it is important that design reflects changing standards and imperatives, and that new buildings aim to achieve net-zero emissions standards.

#### **Growth and Change**

Administration categorizes communities to indicate if they 1) have been planned (new community), 2) have occupied homes (actively developing), or 3) are substantially complete (established). As of 2021 September, there were six new communities and 31 actively developing communities (Map 2). In 2021, five communities (Ambleton, Belvedere, Haskayne, Homestead, and Rangeview) transitioned from new community to actively developing, meaning the first occupancy permit has been issued in the community. No actively developing communities were re-classified as established in 2021. Communities typically transition to the established area when they only have multi-residential unit capacity and less than 50 single or semi-detached homes still to be built in the community.

There were 6,079 new residential units applied for in these communities in the first nine months of 2021, a 70 per cent increase over the 3,584 units applied for in the same period of 2020. The bulk of new units have occurred in the North, Northeast, Southeast, and South sectors (Figure 10).

#### **Growth Capacity**

The projections for residential unit growth for 2021-2025 anticipate a similar trend with most units expected to be built in the North, Northeast, Southeast, and South sectors. These four sectors represent 89 per cent of the 18,850 single and semi-detached units and 90 per cent of the 13,500 multi-residential units that are forecasted to be built by 2025.



Map 2: Thirty-Six Actively Developing Communities and Six New Communities



Figure 10: Number of Building Permit Applications by Sector (Units)

The current serviced land supply shows the highest capacity for growth is in the Northeast, Southeast, and South sectors. For all sectors, the total supply of land that is currently serviced or funded to be serviced, represents between 15 and 20 years of growth capacity, depending on the pace that it occurs.

The following discussion provide a summary of growth, by sector and community. Table 1 summarizes the information across the sectors.

Contor	Units Applied For in	Serviced and Funded	Years of Serviced and
Sector	2021 (to September)	Land Supply (Hectares)	Funded Land Supply
North	1,493	1,191	18 to 25
Northeast	1,415	612	9 to 14
East	75	202	8 to 9
Southeast	1,279	1,028	15 to 22
South	1,119	1,200	16 to 23
West	598	203	8 to 12
Northwest	118	106	19 to 27
Total	6,097	4,542	15 to 20

#### 2018 Approved New Communities Development Progress Update

The 2018 communities continue to progress through the development continuum (Table 2) with Ambleton, Homestead, Belvedere, Seton, Rangeview, and Haskayne reaching first occupancies by September 2021. Symons Valley Ranch, Keystone Hills, and TwinHills have not progressed past the Outline Plan stage but it should be noted that Symons Valley Ranch is not expecting detached housing as part of the development. Approximately 431 new units have now been initiated through building permit applications in these areas. It is encouraging to see that many of the communities responded positively in 2021 after a challenging year in 2020; however, it is still unlikely that any of the business cases will meet the City build-out target of 250 units each by 2022, and will fall well short of the units projected in the business cases themselves. With the pace of development in these communities being slower than expected, infrastructure delivery and funding commitments within City budgets are likely to be extended. Until completed, these investments may have influence over The City's ability to fund and deliver additional new community infrastructure.



#### Table 2: Progress Update on Approved 2018 New Community Business Cases

#### Definition of Each Stage of the Approvals Continuum for Table 2:

Policy Stage: a Council approved Area Structure Plan provides high-level guidance for future land development.

Growth Management Stage: a Growth Management Overlay on the lands has been removed by Council, associated City-funded infrastructure has been budgeted, and the next stages of planning, servicing, and land development can move forward.

Land Use Stage: land use designations have been granted by Council, showing the future extent and use of lands across the community.

Outline Plan Stage: an outline plan has been approved by Calgary Planning Commission, showing the layout of the future community and details of engineering and land servicing.

Subdivision Stage: a subdivision application has been applied for in support of the outline plan.

Infrastructure Stage: the civil engineering design for the infrastructure has been approved, and therefore grading and construction of the essential on-site infrastructure can begin.

Development Stage: a development agreement has been executed for the lands.

#### **Financial Summary**

Administration tracks the 2019-2022 Council approved budgets allocated to new and actively developing communities to monitor the progress and use of the dedicated funding approved in 2018 in support of those 14 new communities.

#### Capital Budget

In 2020, the revised capital budget for the communities approved in 2018 was \$93.0 million, with a spend of \$65.9 million that year. Most of the investment was in Rangeview, followed by Glacier Ridge, Haskayne, and Alpine Park (Figure 11). In 2021 the capital budget for the new communities approved in 2018 was \$106.4 million, of which \$29.4 million was spent in the first nine months of the year. The bulk of the spending was again in Rangeview, followed by Alpine Park and Glacier Ridge (Figure 12). The gap in

budget compared to expenditures is due to only showing nine months of spend, timing of public infrastructure to the pace of development, and unexpected project delays.



Figure 11: 2020 Capital Budget and Expenditures for Communities Approved in 2018

Figure 12: 2021 Capital Budget and Expenditures for Communities Approved in 2018



In 2020, the communities that were initiated prior to 2018 spent \$29.8 million of the \$47.2 million budgeted amount. The communities of Sage Hill, Legacy, and Copperfield had the most significant investment (Figure 13). The capital budget allocation in 2021 for communities initiated prior to 2018 is \$45.0 million and has a total spend of \$11.9 million as at September 30<sup>th</sup>, 2021 (Figure 14).



#### Figure 13: 2020 Capital Budget and Expenditures for Communities Initiated Prior to 2018

Figure 14: 2021 Capital Budget and Expenditures for Communities Initiated Prior to 2018



#### **Operating Budget**

New Communities require operating funds to support infrastructure and services for new residents. For the purposes of this report, the operating costs related to parks and open spaces, public transit, parking, sidewalks and pathways, streets, bylaw education, and fire and emergency response are considered. It is notable however, that the total operating costs of a community include many more services than those listed. As part of the 2019-2022 budget cycle Administration was able to calculate direct incremental operating costs needed to start a community, not the full operating costs incurred over the lifetime of the community. The slower pace of progress noted for the 14 new communities approved in 2018 impacts the timing and amounts of operating budget required to service new communities. As a result, Administration

will be reviewing the pace of growth compared to the 2019-2022 budget allocations and the impacts this may have on the 2023-2026 budget cycle.

In 2020, for the new communities approved by previous Council in 2018, there was no operating budget or spend needed as no housing units were completed. In 2021 there was a \$6.8 million operating budget allocation identified for fire and emergency response (not presented in the charts below), however none of this was spent in the first nine months of 2021 because the fire stations have yet to open and staff have not been hired.

In the actively developing communities that were initiated prior to 2018 the total operating expenditures in 2020 and 2021 were well below the revised budgets for those years (Figures 15 and 16). Both the 2020 and 2021 budgets for the actively developing communities were reduced by approximately \$5.5 million. These reductions were sourced from a \$1.9 million reduction across Parks, Public Transit, and Bylaw Education as a result of the Council directed tax supported \$60 million budget reduction overall for the Corporation in 2019 and a \$3.5 million reduction across Fire and Parks from the Council directed tax supported 1.5 per cent budget reduction overall for the Corporation in 2020. The operating expenditures in 2020 were \$3.4 million of the revised budget of \$8.1 million. In the first nine months of 2021, the actual expenditures were \$5.3 million of the revised budget of \$16.6 million. Public Transit has seen a reduction in operational expenditures due to delays in implementing additional service given demand levels. Streets along with sidewalks and pathways have required less operational work due to the pace of growth being slower than expected.



Figure 15: 2020 Total Operating Budget and Expenditures for Communities Initiated Prior to 2018



#### Figure 16: 2021 Total Operating Budget and Expenditures for Communities Initiated Prior to 2018

#### **Next Steps**

In 2022, Administration will review 20 business cases for new community development across seven different Area Structure Plans. Recommendations and budget implications will be brought forward to Council as part of the 2023-2026 service plans and budget decisions.

#### Conclusion

Competitive interest rates and increased sales of existing housing is increasing pressure for new housing stock in the actively developing and new communities. Building permit applications correspondingly increased in the first nine months of 2021. As the communities approved for development before and in 2018 progress, they can help meet this market demand. However, uncertainties related to the pandemic may continue to challenge construction and delivery for the development industry and The City.

Applications in new and actively developing communities accounted for 62 per cent of new units across Calgary so far in 2021. While the city is seeing a more compact form of development in these areas, it should be noted that the balanced growth targets identified in Part 5 of the *Municipal Development Plan* are becoming more difficult to achieve under current development trends. Measured and definitive steps will be needed to change this direction and enable a larger proportion of Calgary's future population to live within the balanced growth boundary identified on *Map 1: Urban Structure in the Municipal Development Plan*. This balanced growth boundary is the line by which progress toward achieving the 50/50 residential growth split is measured between now and 2076.

## **Established Areas**

#### Introduction

The Citywide Growth Strategy: Established Area outlines how The City can support established communities experiencing growth and change due to redevelopment. As this occurs, it is important that public spaces and networks expand and adapt to meet the changing needs and desires of existing and new residents. Maintaining established area communities as desirable places to live and to do business helps achieve the growth goals and vision outlined in the *Municipal Development Plan*. This strategy is one of
several City initiatives, along with Main Streets, the Transit Oriented Development (TOD) Strategy, and Local Area Planning that collectively aim to support compact, sustainable, and strategic growth in the established area through targeted investments and process improvements.

Calgary's established area includes approximately 180 communities and is home to about 80 per cent of Calgary's population. Within this area there are various ages and types of communities, ranging from those experiencing redevelopment and change, and those that have just recently been completed and are likely to be stable for several decades. This strategy focuses on identifying and supporting the communities that are experiencing growth and redevelopment to the greatest degree.

### Climate

Much of the established area has higher exposure and vulnerability to climate-related hazards such as extreme heat, flooding, and severe storms. Vulnerability may be driven by strained social systems, degraded, or missing natural assets, and aging infrastructure that is not designed for current or future climate conditions.

The Intergovernmental Panel on Climate Change has a goal to limit global warming to 1.5 degrees Celsius. To achieve this, sustainable intensification of land use will be required. Data shows that Calgary's emission reduction target will not be met through current city-building practices and patterns. To reduce emissions, The City can support densification, turn-over/retrofit of older building stock, and improvements to transit and active mobility infrastructure. Additionally, investments in the public realm can have co-benefits in support of climate adaptation such as stormwater management, urban heat island mitigation, local food production, and resilience against severe storms.

Established Area investment is a key component to achieving the balanced growth target in Part 5 of the *Municipal Development Plan*. If these targets are achieved, The City could avoid 12 megatonnes of emissions by 2050, save \$20 billion in avoided infrastructure costs, and reduce energy bills of Calgarians by \$91 million annually.

## **Growth and Change**

To understand recent growth in the established area, the number and type of building permits were examined. There has been a significant increase in applications for new residential units with 3,724 so far in 2021 compared to 2,042 units over the same period of 2020 (Figure 17). Of the units applied for in the first nine months of 2021, 656 were single and semi-detached and 3,068 were multi-residential.



Figure 17: Building Permit Applications in the Established Areas in Q1-Q3 2020 and 2021 (Units)

Single and semi-detached development was primarily located near the downtown in 2021, as communities around the downtown continue to redevelop. In some central communities, large sites such as golf courses are infilling with both detached and multi-residential development (e.g., Harvest Hills). New multi-residential units are also occurring close to and in the downtown but are also dispersed across the established area as developments such as Medicine Hill and University District continue to progress.

In 2021, 36 per cent of citywide new residential units were constructed within the balanced growth boundary as identified on Map 1 of the *Municipal Development Plan*. Increased unit growth in these areas help move Calgary towards the growth targets in Section 5.2.2 (c) of the *Municipal Development Plan*.

# **Growth Capacity**

It was estimated that there would be 2,830 new multi-residential units in the established area in 2021. So far there have been applications for 3,068 multi-residential units in 2021, which is above expectations. Development patterns are not expected to align directly to yearly averages, and 2021 could be compensating for reduced activity in 2020. The annual amount of new multi-residential units in the established areas is not unlimited, is directly connected to market demand and absorption, and is increasingly considered by Administration when evaluating the viability of future projects. There were 2,236 units applied for in the balanced growth boundary to date in 2021, representing 36 per cent of total units in Calgary. Of those units, 77 per cent were multi-residential. Multi-residential units are typically smaller in size than detached housing, which could adversely affect the ability to achieve a 50 per cent population split with areas outside the balanced growth boundary in alignment with the policies of *Part 5 of the Municipal Development Plan*.

## **Financial Summary**

In 2020, Phase 1 of the Citywide Growth Strategy: Established Area employed a collaborative and data driven approach to identify which areas were experiencing growth and redevelopment to the greatest extent. The previous Council approved the Established Area Investment Fund with an initial \$30 million of funding for the purpose of short-term upgrades in the public realm in these areas to help offset the pressures of growth and improve quality of life. In late 2020, an additional \$21.6 million plus investment income (\$0.7 million) was directed to this fund in accordance with the terms and conditions to support ongoing investments. The intention is to match market momentum with investment in growing areas intentionally and directly. These upgrades would support both existing and future residents and businesses. In Phase 1, stakeholders identified the types of upgrades that would be meaningful to communities, and these projects were matched with City funding to be delivered in 2021-2022.

#### Status of 2021-2022 Phase 1 Investment

The \$30 million investment in Phase 1 is funding 15 public realm projects across 17 communities. These projects include a wide range of public realm upgrades including completing missing sidewalk and pathway connections, traffic calming, pedestrian safety improvements, and enhancing park and community recreation amenities. Examples include the Balmoral Circus projects in Mount Pleasant, and the Sunalta Hub in Sunalta. These projects were identified in late 2019 and 2020 with detailed design and engagement work with communities occurring throughout 2021. Most projects are expected to be constructed in 2022 and 2023. At the time of writing this report, 98 per cent of the original \$30 million Phase 1 fund investment has been allocated to projects and is anticipated to be spent by end 2023.

Further information on the Phase 1 projects including project timelines and preliminary designs can be found on the <u>Established Area Growth and Change Strategy webpage</u>.

An additional \$5.5 million has been directed towards utility upgrades in support of growth within the first Main Street improvement areas, specifically in the 17<sup>th</sup> Ave SW and Marda Loop areas.

Administration is preparing a request for the next set of investments in the 2023-2026 budget for areas that are growing and changing. Identification of these growth areas is underway and will be followed by the identification of potential projects that align with the goals of the overall strategy. This exercise will gather input from communities and stakeholder groups within the growth areas, as well as infrastructure departments within Administration. It is anticipated that a Phase 2 report on this Strategy will be delivered to Council mid-2022 and will identify these upgrades to utilize the \$22.3 million balance in the Established Area Investment Fund that has not yet been allocated, along with a budget request to be considered in the next budget cycle.

#### **Collaborative Investment in the Established Area**

In addition to the funding from the Citywide Growth Strategy: Established Area, there are many other citybuilders who are investing in the established area:

- 1. The City, which invests in growing and changing areas in the established area through its service plans and budget process, , including \$60 million specifically for Main Streets corridor upgrades in 2019-2022, and the Established Area Investment Fund outlined above, along with additional investment in lifecycle, maintenance, and services;
- 2. Developers and builders via redevelopment and infill construction, related upgrades, levy contributions to off-site treatment plants, exchanges for protecting heritage assets, and financial contributions through bonus density programs to invest in the local area;
- 3. Businesses, who invest portions of business taxes and local parking revenue in the local Business Improvement Areas; and
- 4. Communities, who contribute through fundraising, access to grant programs and in-kind efforts.

# **Next Steps**

#### **Development of Financial Tools for Established Area Investment**

Through several collaborative, multi-stakeholder working groups, the Citywide Growth Strategy: Established Area is developing financial tools to activate timely investment in support of growth and redevelopment. In alignment with the notion that city-building and investment is done by The City, developers, businesses and communities, the work has identified financial tools that help activate this multi-stakeholder investment. Results of this work will be brought to Council in mid-2022, along with recommendations for tool implementation for the 2023-2026 budget cycle.

Since the last report of 2020 December 1 (PFC2020-1245), which focused on the development of financial tools, Administration has been exploring or developing several investment tools. This includes a 2-year Pilot Tax Uplift Tool that would reinvest taxes into a growing area, a linear utility off-site levy that would reduce financial risks for redevelopment projects, a contribution program for higher density projects to contribute to the local community, and grant programs or user fees that might be readily available to business areas and communities.

Specific to the Tax Uplift Pilot tool, The City has developed an approach to calculate the amount of uplift that results from redevelopment within a given area, over a given period of time. This approach calculates the increase in the municipal portion of taxes resulting from redevelopment sites. Administration continues to evaluate the benefits and disadvantages as well as the costs of this approach, how this mechanism for reinvestment could work within the existing City budget process. Recommendations on this are anticipated within the Phase 2 report mid-2022.

Specific to developer contributions, the idea of a linear utility off-site levy is being explored with industry stakeholders within the Off-Site Levy Bylaw Review project, with recommendations anticipated as a conclusion of that initiative later in 2022. Secondly, Administration is reviewing the current bonus density mechanism and considering if an alternative contribution model may be more effective in realizing industry

contributions to local improvements. The intention is to create a predictable mechanism for developer contributions to partner with City investment in redeveloping areas. Members of the working groups are looking at a Community Amenity Contribution tool that is used by other municipalities, including Edmonton and Vancouver; however, Calgary-specific parameters likely need to be developed.

# Conclusion

Without a municipal census from either 2020 or 2021, building permits were used to capture an understanding of population growth within the established area. Sustainable intensification through growth in the established area will be a required part of Calgary's climate strategy. The number of new residential units in the established area increased considerably from 2020 to 2021. New units tend to be located near the downtown, although multi-residential units are more evenly dispersed across the established area due to large parcel opportunities for redevelopment (e.g. golf course infill). New residential units in the established area are primarily multi-residential; however, due to a smaller unit size, population increases may not follow the same distribution of new units.

To prepare for timely and meaningful investment in growing communities within the 2023-2026 service plan and budget cycle, Administration is collaborating with other city-building stakeholders to explore financial tools to identify and activate investment. This reflects that a coordinated effort including Established Area Investment, Transit Oriented Development (TOD) Strategy, Main Street initiatives, and policies like Local Area Plans, and the Guide for Local Area Planning will be required to realize a compact urban form in the future city, as laid out by Part 5 of the *Municipal Development Plan*.

# POSTPONED REPORT

Excerpt from the Minutes of the Regular Meeting of Infrastructure and Planning Committee, 2021 December 1:

10.1.1. (Postponed) Summary of Current Proceedings, IP2021-1509

## "Moved by Councillor Sharp

That the Agenda for the 2021 December 1 Regular Meeting of the Infrastructure and Planning Committee be confirmed, **after amendment**, as follows:

• by postponing Item 10.1.1 to the 2022 January 14 Regular Meeting of the Infrastructure and Planning Committee;...

**MOTION CARRIED**"