CITY OF LEDUC
COUNCIL MEETING AGENDA

Monday, May 13, 2019, 7:00 P.M.
Council Chambers, Leduc Civic Centre
1 Alexandra Park, Leduc, Alberta

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1. CALL TO ORDER

2. ADOPTION OF AGENDA

3. ITEMS FOR DISCUSSION AND RELATED BUSINESS

   3.1 Select Items for Debates

   3.2 Vote on Items not Selected for Debate

4. ADOPTION OF PREVIOUS MINUTES

   4.1 Approval of Minutes of the Council Meeting held April 29, 2019

5. RECOGNITION ITEMS

6. PUBLIC COMMENTARY

7. PUBLIC HEARING

   7.1 Bylaw No. 1023-2019 – Land Use Bylaw Text Amendment

8. PRESENTATIONS

9. BUSINESS

   9.1 Greenhouse Gas Reduction Action Plan Approval

   (K. Chomlak / S. Olson)

   9.2 Leduc & District Regional Waste Management Authority ("LDRWMA")

   (Councillor T. Lazowski)

10. BYLAWS

10.1 Bylaw No. 1023-2019 – Land Use Bylaw Text Amendment (2nd & 3rd Readings)

(K. Woitt)

11. PUBLIC COMMENTARY

12. IN-CAMERA ITEMS

12.1 Accord Interim Update for May 2019

FOIP s. 21, 24 & 25

(M. Hay / S. Olson / I. Sasyniuk)

13. RISE AND REPORT FROM IN-CAMERA ITEMS

14. UPDATES FROM BOARDS & COMMITTEES

14.1 Council Member Updates from Boards & Committees

14.2 Council Member Updates from Commissions, Authorities, Other

15. INFORMATION REPORTS

15.1 Mayor's Report

15.2 Building Inspector's Report

15.3 Newly Issued Business Licences

16. ADJOURNMENT

MINUTES OF THE CITY OF LEDUC

COUNCIL MEETING

Monday, April 29, 2019

Present:	Mayor B. Young, Councillor B. Beckett, Councillor B. Hamilton, Councillor L. Hansen, Councillor T. Lazowski, Councillor L. Tillack
Absent:	Councillor G. Finstad
Also Present:	P. Benedetto, City Manager, S. Davis, City Clerk

1. CALL TO ORDER

Mayor B. Young called the meeting to order at 7 pm.

2. ADOPTION OF AGENDA

That the agenda be adopted as presented.

3. ITEMS FOR DISCUSSION AND RELATED BUSINESS

3.1 Select Items for Debate

The following items were selected for debate:

4. ADOPTION OF PREVIOUS MINUTES

4.1 Approval of Minutes of the Council Meeting held Monday, April 8, 2019

9. BUSINESS

9.1 RCMP Annual Update

9.2 2018 City of Leduc Annual Report

9.3 City Satisfaction Survey - Results

9.4 Support for the Resource Communities of Canada Coalition ("RCCC")

9.5 Condominium Tax Enquiries

10. BYLAWS

10.2 Bylaw No. 1017-2019 Property Tax Rate Bylaw (2nd & 3rd Readings)

10.3 Bylaw No. 1022-2019 Youth Council Bylaw (2nd & 3rd Readings, as Amended)

3.2 Vote on Items not Selected for Debate

Votes recorded under item headings.

4. ADOPTION OF PREVIOUS MINUTES

4.1 Approval of Minutes of the Council Meeting held Monday, April 8, 2019

MOVED by Councillor T. Lazowski

That the minutes of the Council Meeting held Monday, April 8, 2019, be approved with the following amendment:

12. IN-CAMERA ITEMS

Item 12.2 - St. Michael Catholic Parish and the Airport Vicinity Protection Area ("AVPA) - FOIP s. 16, 24 & 25 will be moved to become:

9. BUSINESS

Item 9.8.

Motion Carried Unanimously

5. RECOGNITION ITEMS

There were no Recognition Items for the agenda.

6. PUBLIC COMMENTARY

There was no Public Commentary.

7. PUBLIC HEARING

There were no Public Hearings for the agenda.

8. PRESENTATIONS

There were no Presentations for the agenda.

8.1 Celebration of National Poetry Month

Councillor B. Beckett introduced C. Klooster, a Grade 8 student in the City of Leduc, who recited two pieces of poetry: "Hey World, Here I am!" and "A Letter to Pets".

Councillor B. Beckett presented C. Klooster with a City of Leduc blanket and thanked her for the presentation.

9. BUSINESS

9.1 RCMP Annual Update

Insp. D. Kendell, RCMP, made a presentation providing Council with an overview of the last year, which included, but was not limited to:

- Crime stats (down)
- Call stats (down)
- Human resources challenges
- New legislation (cannabis)
- Mandatory alcohol screening
- Crime mapping
- Expansion of building
- Leduc Enforcement Services
- City of Leduc Photo Radar
- School Resource Officer
- Crime Reduction Unit
- Traffic Enforcement Unit
- Check Stops
- QEII Project

Insp. D. Kendell answered Council's questions.

Council thanked Insp. D. Kendell for the presentation and for her written report.

9.2 2018 City of Leduc Annual Report

M. Hay, Director, Intergovernmental Affairs and Corporate Planning, and P. Benedetto, City Manager, made a presentation and answered Council's questions.

The 2018 City of Leduc Annual Report will be out in hard copy in the next 2 - 3 weeks.

9.3 Citizen Satisfaction Survey - Results

N. Booth, Manager, Communications and Marketing Services, and P. Kyba, Advanis, made a PowerPoint presentation (Attached) and answered Council's questions.

9.4 Support for the Resource Communities of Canada Coalition ("RCCC")

M. Hay, Director, Intergovernmental Affairs and Corporate Planning, made a presentation seeking support for the recommendation and answered Council's questions.

MOVED by Councillor T. Lazowski

That Council support the coordinated efforts of the Alberta Urban Municipalities Association ("AUMA"), the Rural Municipalities Association ("RMA") and other municipal associations to form the Resource Communities of Canada Coalition.

Motion Carried Unanimously

9.5 Condominium Tax Enquiries

I. Sasyniuk, General Manager, Corporate Services, made a PowerPoint presentation (Attached) and answered Council's questions.

MOVED by Councillor B. Beckett

That Council approve the expansion of the City's hydrant inspection program to include private hydrants located in condominiums and apartments with no additional charges administered for the inspections.

Motion Carried Unanimously

MOVED by Councillor B. Beckett

That Council approve funding of $13,600 for 2019 from the Water Reserve with the ongoing cost to be embedded in operational budgets on a go forward basis.

Motion Carried Unanimously

MOVED by Councillor B. Hamilton

That Council retain the current mill rate structure for property taxes for multi-family properties, including condominiums.

Motion Carried Unanimously

10. BYLAWS

10.1 Bylaw No. 1015-2018 - Energy Efficiency Project Debenture Bylaw (1st Reading)

Administration recommends that Bylaw No. 1015-2018 receive first reading.

MOVED by Councillor L. Tillack

That Bylaw No. 1015-2018 for the debenture of funds for the energy efficient project receive first reading.

Motion Carried Unanimously

10.2 Bylaw No. 1017-2019 - 2019 Property Tax Rate Bylaw (2nd & 3rd Readings)

J. Cannon, Director, Finance, and G. Damo, Manager, Revenue Services, made a PowerPoint presentation (Attached) and answered Council's questions.

Administration recommends that Bylaw No. 1017-2019 receive second and third readings, as amended.

MOVED by Councillor B. Beckett

That Council amend Bylaw No. 1017-2019 as follows:

I. On page 1,delete the Alberta School Foundation Fund (ASFF), Opted-Out School Boards and Total School Requisitions sections in its entirety and replace with the following:

Alberta School Foundation Fund (ASFF)

Residential/Farm land	$9,920,137
Non-Residential	$7,680,537

Opted Out School Boards

Residential/Farm land	$730,590
Non-Residential	$1,657,523

Total School Requisitions $19,988,787

II. On page 2 and 3, Part III: Application, delete Section 3 in its entirety and replace with the following:

PART III: APPLICATION

3. a. Council authorizes the City Manager to impose taxes for the purpose of raising revenue to be used towards the payment of expenditures and transfers set out in the budget of the City and for the purpose of raising funds for the school requisition. As a consequence taxes are hereby imposed on each class of assessed property within the City. whether listed in the assessment roll or supplementary assessment roll, at the rates for each class shown below:

General Municipal	Tax Levy	Assessment	Tax Rate
Residential	$29.611,258	$3,990,934,690	7.425
Non-Residential	$18,371,229	$2,156,914,120	8.517
Machinery/Equipment	$ -	$ -	8.517
Supplemental	$150,000		
	$48,132,487	$6.147,848,810	

ASFF

Residential/Farm Land	$9,920,137	$3,717,170,688	2.669

Non-Residential	$7,680,537	$1,744,093,350	4.404
	$17,600,674	$5,461,264,038	

Opted-Out School Boards

Residential/Farm Land	$730,590	$273,759,002	2.669
Non-Residential	$1,657,523	$376,389,77	4.404
	$2,388,113	$650,148,772	

Requisition Allowance Includes Machinery & Equipment	$75,000	$6,152,193,500	0.012
Foundation Includes Machinery & Equipment	$144,650	$6,115,757,500	0.027
Requisition Designated Industrial Properties	$6,712	$61,420,460	0.109

b. Notwithstanding the tax rate set for machinery and equipment, Council completely exempts from taxation machinery and equipment used for manufacturing or processing, pursuant to section 364(1.1) of the Municipal Government Act.

Motion Carried Unanimously

MOVED by Councillor B. Beckett

That Council give Bylaw No. 1017-2019 second reading, as amended.

Motion Carried Unanimously

MOVED by Councillor B. Beckett

That Council give Bylaw No. 1017-2019 third reading, as amended.

Motion Carried Unanimously

10.3 Bylaw No. 1022-2019 – Youth Council Bylaw (2nd & 3rd Readings)

D. Brock, Director, Community and Social Development, made a presentation.

Administration recommends that Bylaw No. 1022-2019 receive second and third readings, as amended.

MOVED by Councillor L. Tillack

That Council give Bylaw No. 1022-2019 second reading, as amended.

Motion Carried Unanimously

MOVED by Councillor B. Hamilton

That Council give Bylaw No. 1022-2019 third reading, as amended.

Motion Carried Unanimously

10.4 Bylaw No. 1023-2019 – Land Use Bylaw Text Amendment (1st Reading)

Administration recommends that Bylaw No. 1023-2019 receive first reading.

MOVED by Councillor L. Tillack

That Council give Bylaw No. 1023-2019 first reading.

Motion Carried Unanimously

11. PUBLIC COMMENTARY

There was no Public Commentary.

12. IN-CAMERA ITEMS

There were no In-Camera Items for the agenda.

13. RISE AND REPORT FROM IN-CAMERA ITEMS

14. INFORMATION REPORTS

14.1 Mayor's Report

There was no discussion.

15. ADJOURNMENT

The Council meeting adjourned at 9:03 pm.

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B. YOUNG, Mayor

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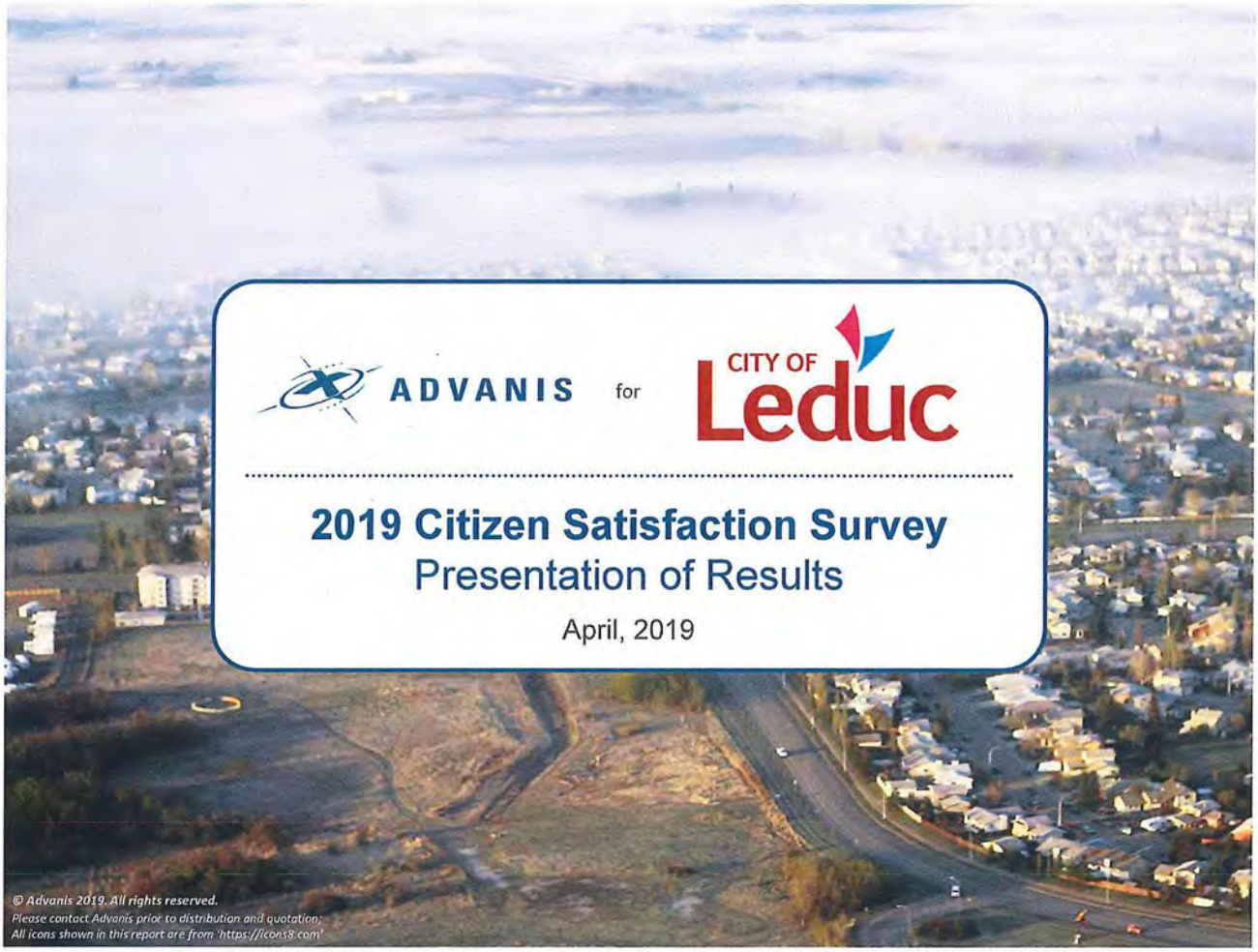
S. DAVIS, City Clerk



Survey Objectives

- Gauging citizens' **perceptions on quality of life** and **community direction**;
- Measuring **satisfaction with City services**;
- Determining **communication preferences** and **satisfaction with existing communications**; and
- Assessing **usage of and satisfaction with waste/recycling services**.

Survey Methodology

🎯 Target Population

City of Leduc residents aged 18+.

Sample Source

Random digit dialing & Advanis' proprietary public sector sample; includes cellphones & landlines.

Surveying Mode

Telephone interviewing system was used (between February 11th and 26th, 2019).

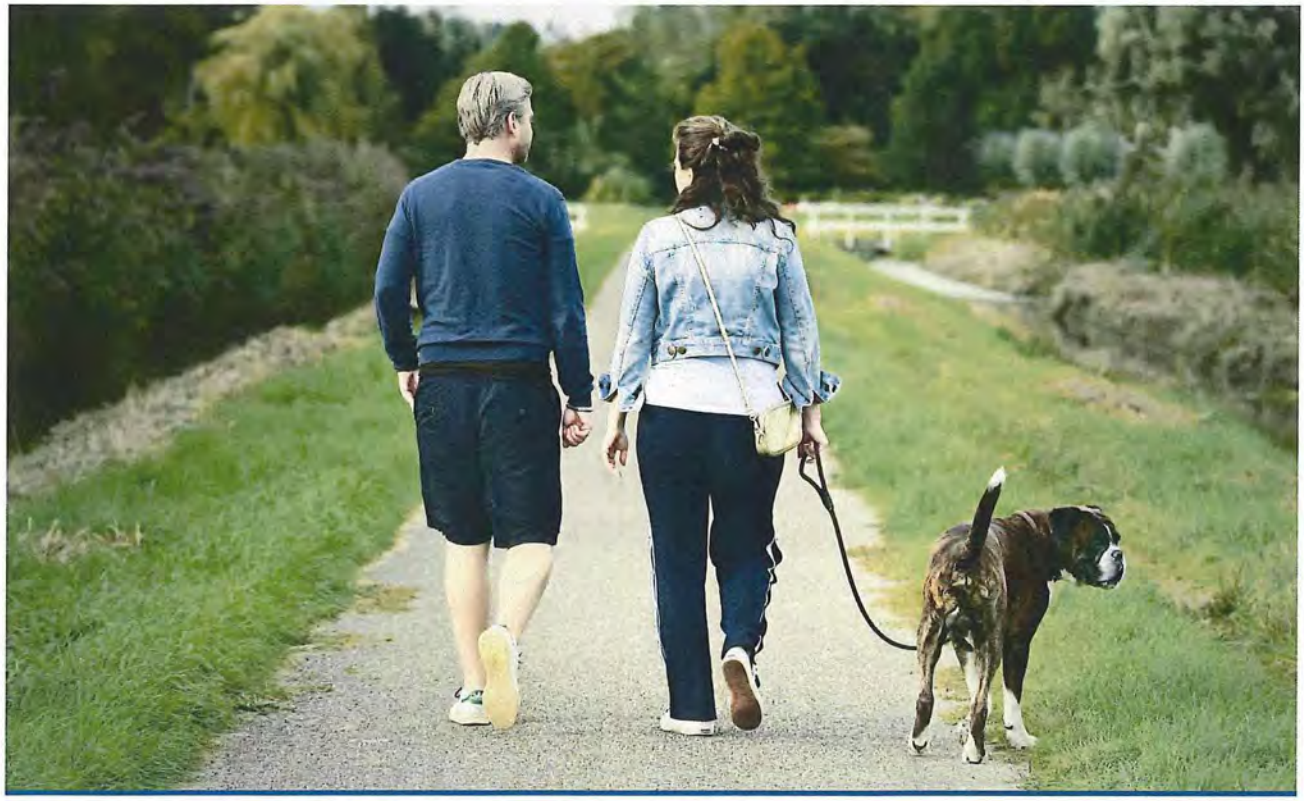
Representativeness

- Soft quotas were set by age, gender, area, and phone ownership to ensure a representative sample.
- Results were weighted to census data for age, gender, area, and phone ownership.

Sample Size

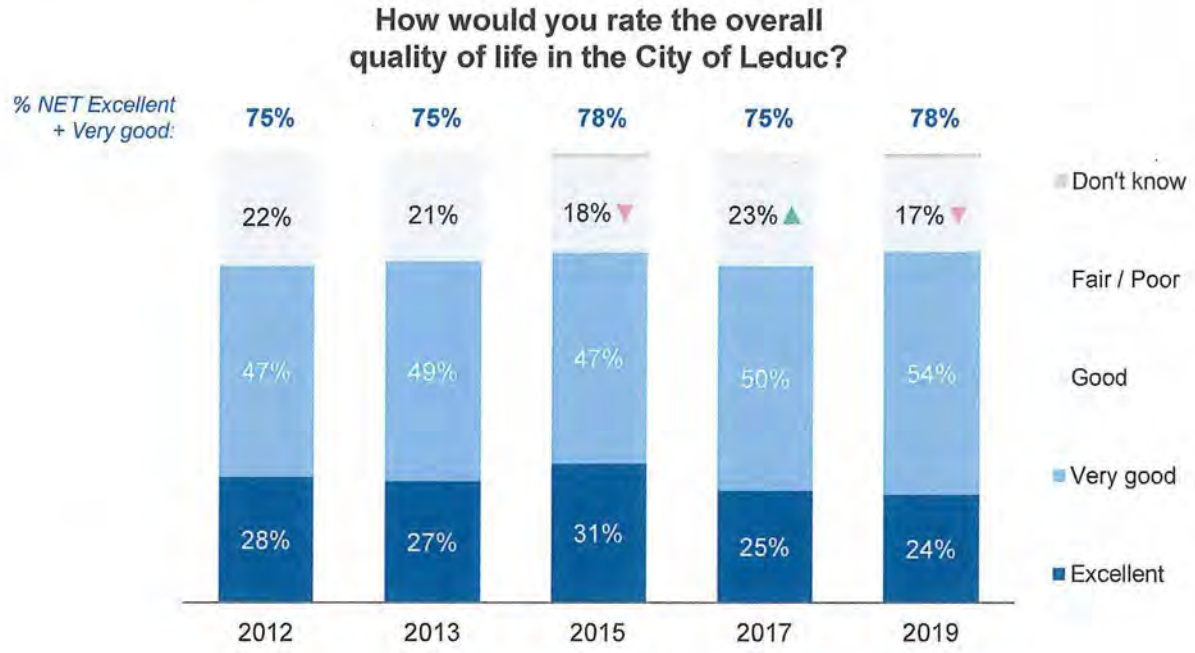
n=404 (Margin of error: ±4.9% at 95% confidence level)

Note: Results missing values are less than 5%. Additionally, results may not add up to 100% due to rounding.



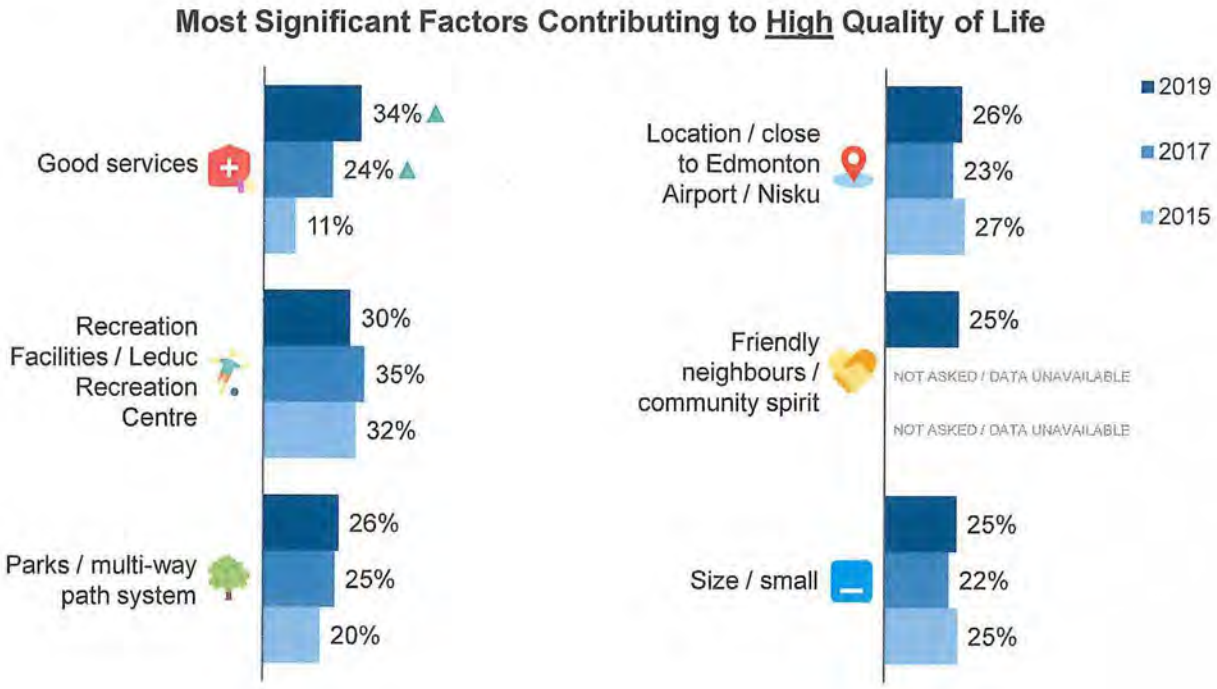
DETAILED FINDINGS:
Quality of Life & Community Direction

Quality of Life in Leduc



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q1 -- In general, how would you rate the overall quality of life in the City of Leduc? Would you say, overall, the quality of life is ...?
(Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Factors Contributing to High Quality of Life



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q2 -- In your opinion, what would you say are the **three** most significant factors contributing to a **high quality** of life in the City of Leduc? Any others?
(Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Factors Contributing to Low Quality of Life

Most Significant Factors Contributing to Low Quality of Life

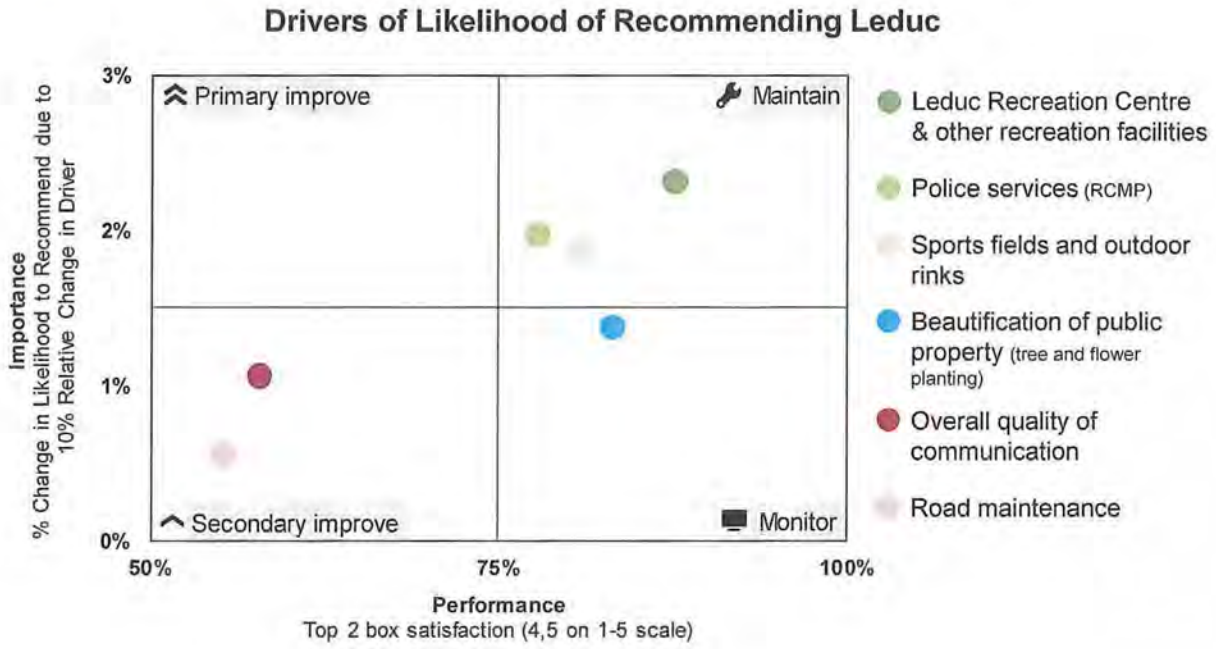
▲ ▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
*** 2017 figure represents 'traffic congestion' only (excludes 'speeding') ** 2017 figures represent 'infrastructure problems'**
***** 2017 figure represent 'city planning/land development'**
Q3 -- In your opinion, what would you say are the **three** most significant factors contributing to a **low quality** of life in the City of Leduc? Any others?
(Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Likelihood of Recommending Leduc

Likelihood of Recommending Leduc as a Place to Live

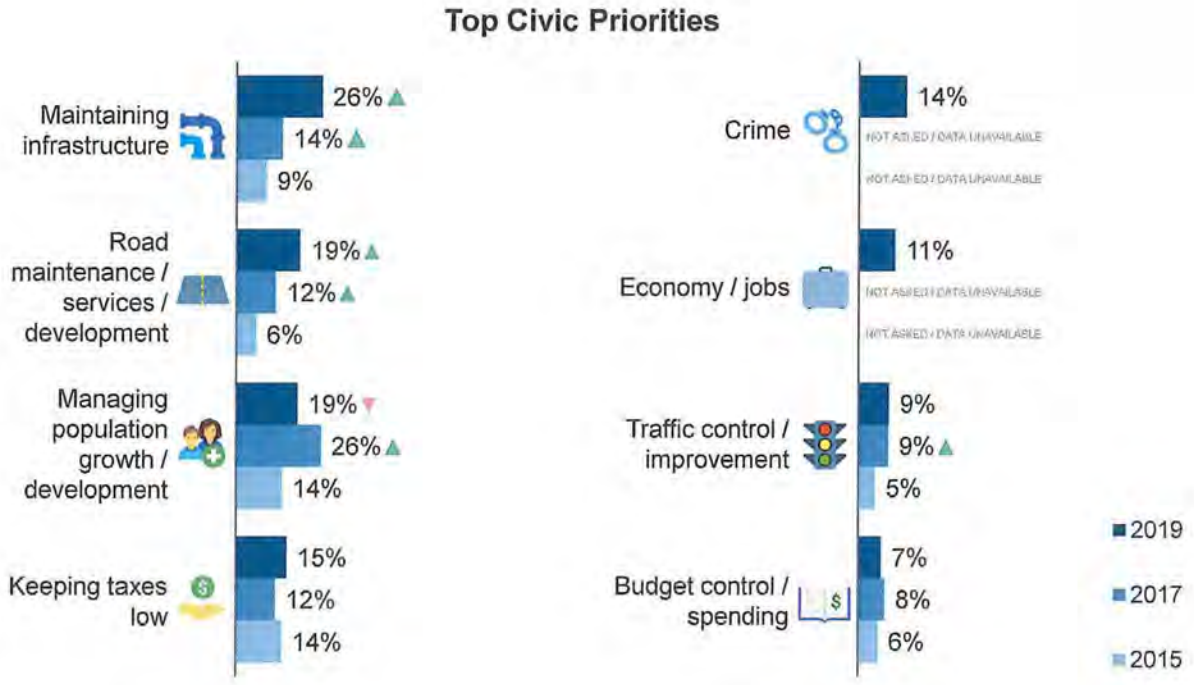
▲ ▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
NET Promoter Score (NPS) is calculated by subtracting the Detractor score by from Promoter score (% Promoters - % Detractors)
Q4 -- On a scale of 0 to 10, where 0 means not at all likely and 10 means extremely likely, how likely are you to recommend Leduc as a place to live to friends or family? (Base: All respondents. 2019 n=395; base for all previous years assumed to be n=400

Factors Influencing Likelihood to Recommend



Q4 -- On a scale of 0 to 10, where 0 means not at all likely and 10 means extremely likely, how likely are you to recommend Leduc as a place to live to friends or family? (Base: All respondents. 2019 n=395)

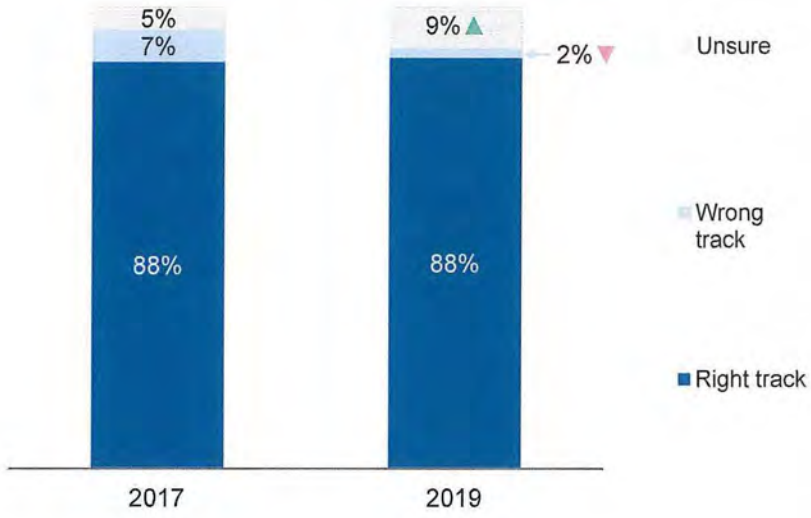
Civic Priorities



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q5 -- Thinking about the City of Leduc, what would you say are the most important priorities facing the City of Leduc Council today? (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Community Direction

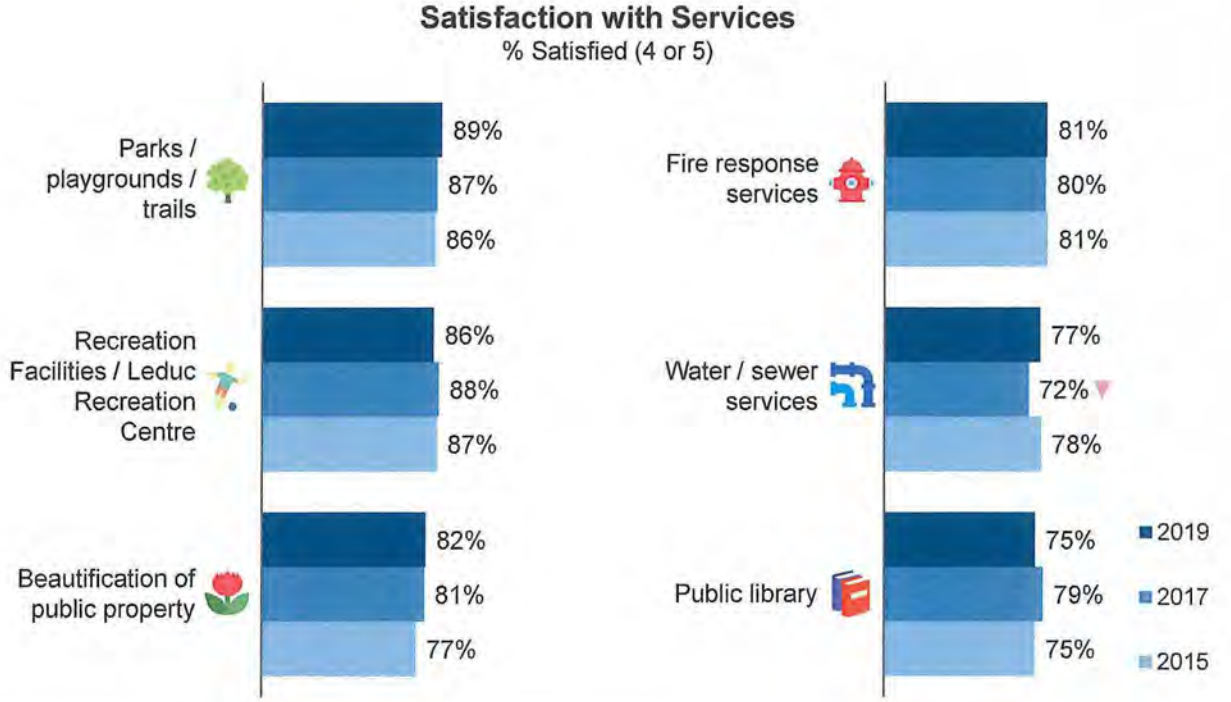
Would you say Leduc is on the right track, or the wrong track?



▲ ▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q6 -- Overall, would you say that the City of Leduc is on the right track, or the wrong track?
(Base: All respondents. 2019 n=404; base for 2017 assumed to be n=400)

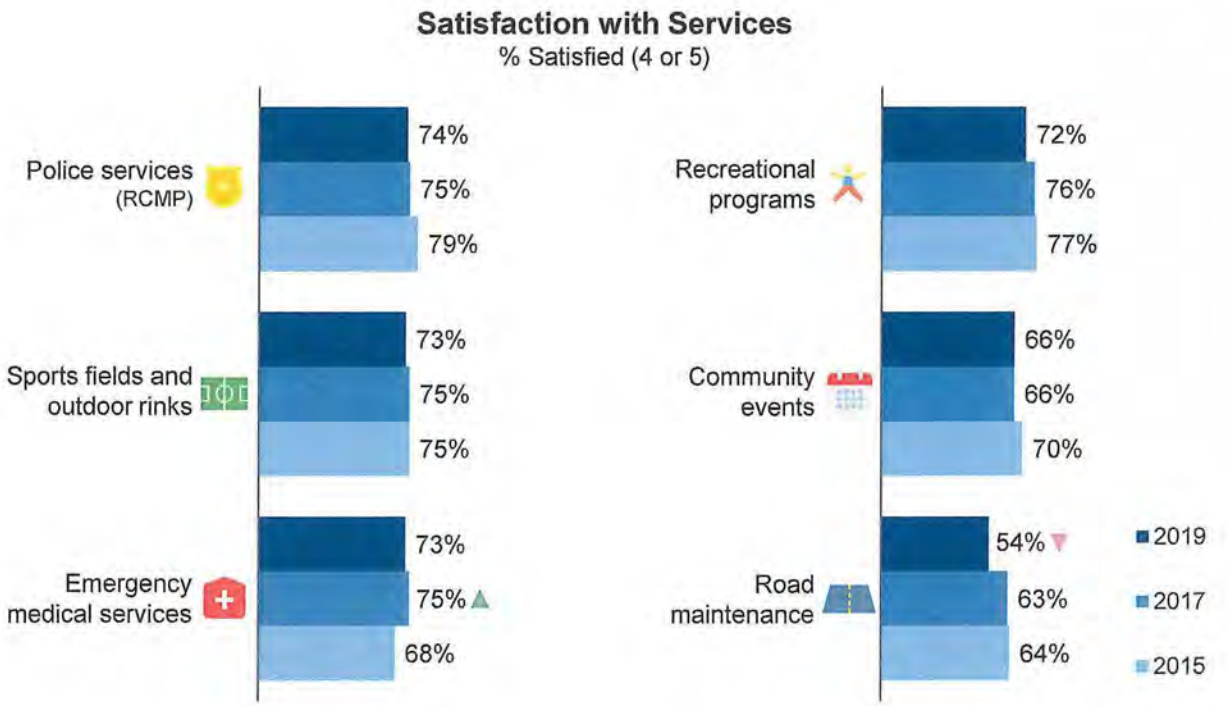
DETAILED FINDINGS:
Satisfaction with City Services

Evaluation of City Services – Top Rated Services (75%+)



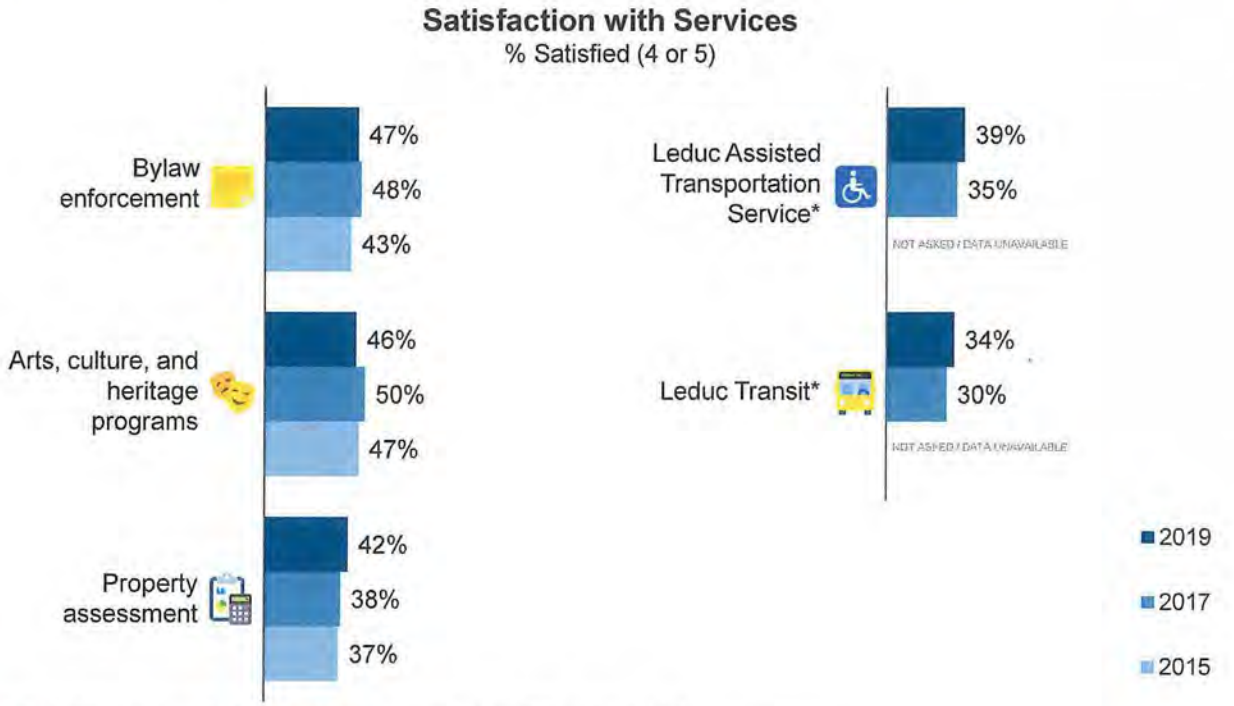
▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q7 -- Thinking about the specific services provided by the City of Leduc, how satisfied are you with each of the following services using a scale from 1 to 5 where a 1 means you are not at all satisfied and a 5 means you are very satisfied. (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Evaluation of City Services – Middle Rated Services (50-75%)



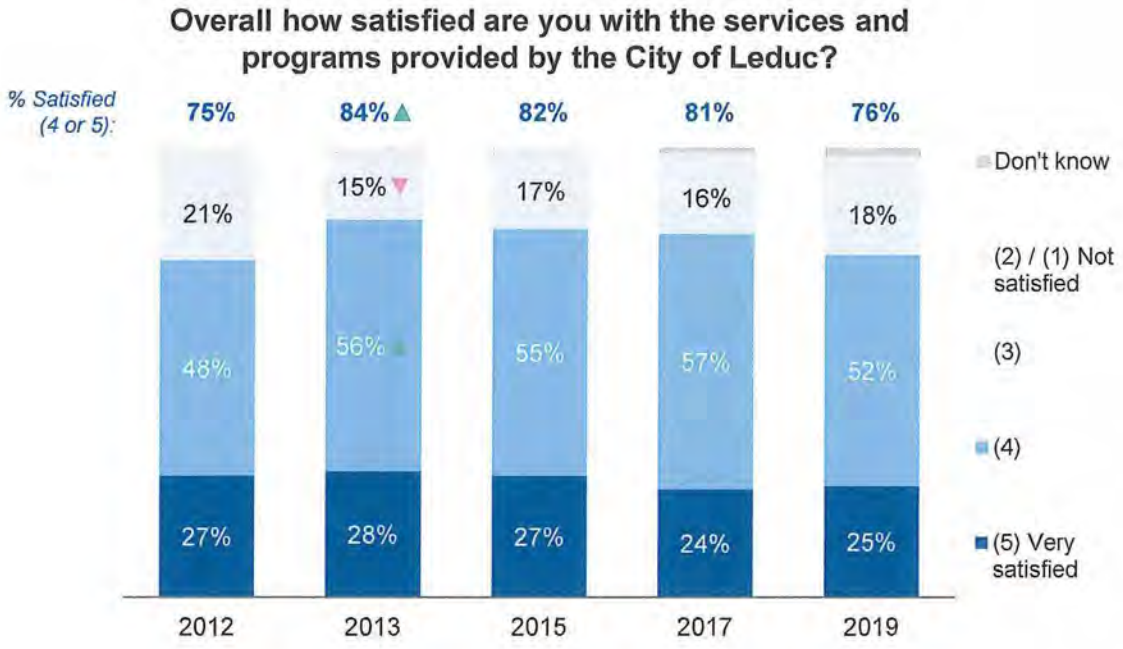
▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q7 -- Thinking about the specific services provided by the City of Leduc, how satisfied are you with each of the following services using a scale from 1 to 5 where a 1 means you are not at all satisfied and a 5 means you are very satisfied. (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Evaluation of City Services – Lower Rated Services (<50%)



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
*** Prior to 2017, 'Leduc Transit' and 'Leduc Assisted Transportation Service' were combined (44% satisfied in 2015)**
Q7 -- Thinking about the specific services provided by the City of Leduc, how satisfied are you with each of the following services using a scale from 1 to 5 where a 1 means you are not at all satisfied and a 5 means you are very satisfied. (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Overall Satisfaction With City Services

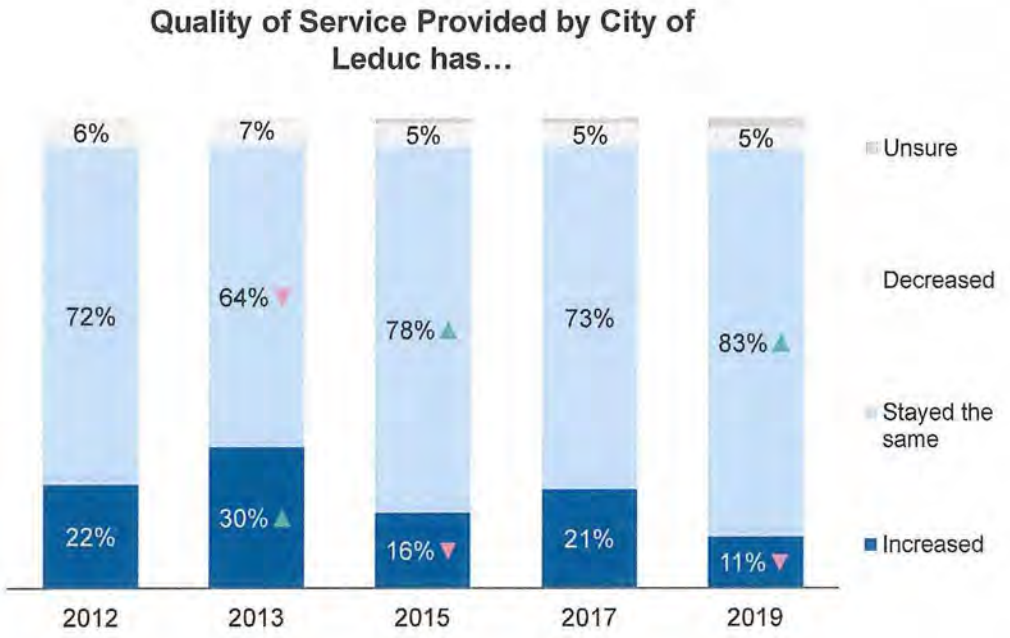


▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q9 -- Taking into consideration all City of Leduc services and programs – and again using a scale from 1 to 5 where 1 means you are not at all satisfied and a 5 means you are very satisfied - overall how satisfied are you with the services and programs provided by the City of Leduc to residents? (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Derived Importance of City Services

Q9 -- Taking into consideration all City of Leduc services and programs – and again using a scale from 1 to 5 where 1 means you are not at all satisfied and a 5 means you are very satisfied - overall how satisfied are you with the services and programs provided by the City of Leduc to residents? (Base: All respondents who provided an answer. 2019 n=394)

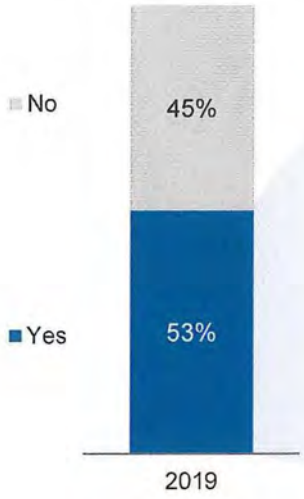
Perceived Changes in Service Quality



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q8 -- Thinking back over the last 12 months, would you say that the quality of service provided by the City of Leduc has ....?
(Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

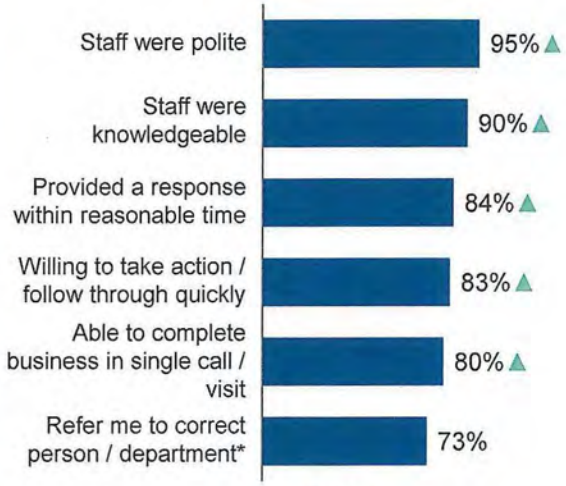
Satisfaction With City Staff

Have you personally had any interactions with City staff while using/accessing services?



Agreement that...

% (5) Strongly agree + % (4)



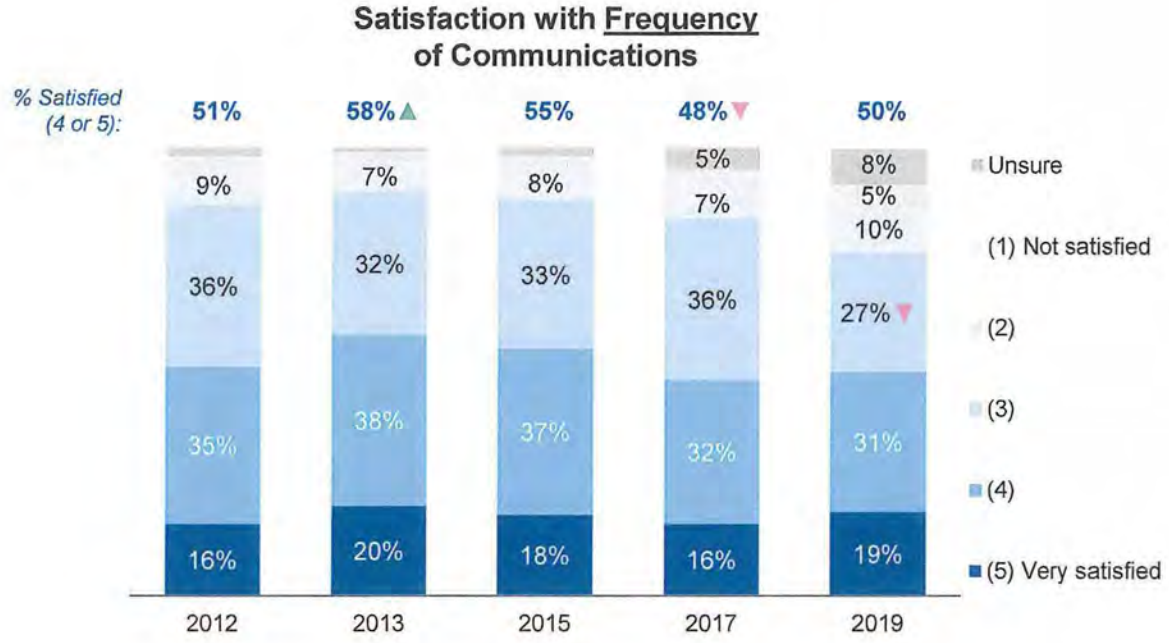
▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*

**** Note that 13% of respondents responded by saying "Not applicable" to this level.***

Q10 -- During the past 12 months, have you personally had any interactions with City staff when you used or accessed any services from the City of Leduc? (Base: All respondents. 2019 n=404; base for 2017 assumed to be n=400) // **Q11** -- Thinking of your most recent experience with the City of Leduc, I'm going to ask you a number of questions about the service you received. (Base: All respondents. 2019 n=219; base for 2017 assumed to be n=316)

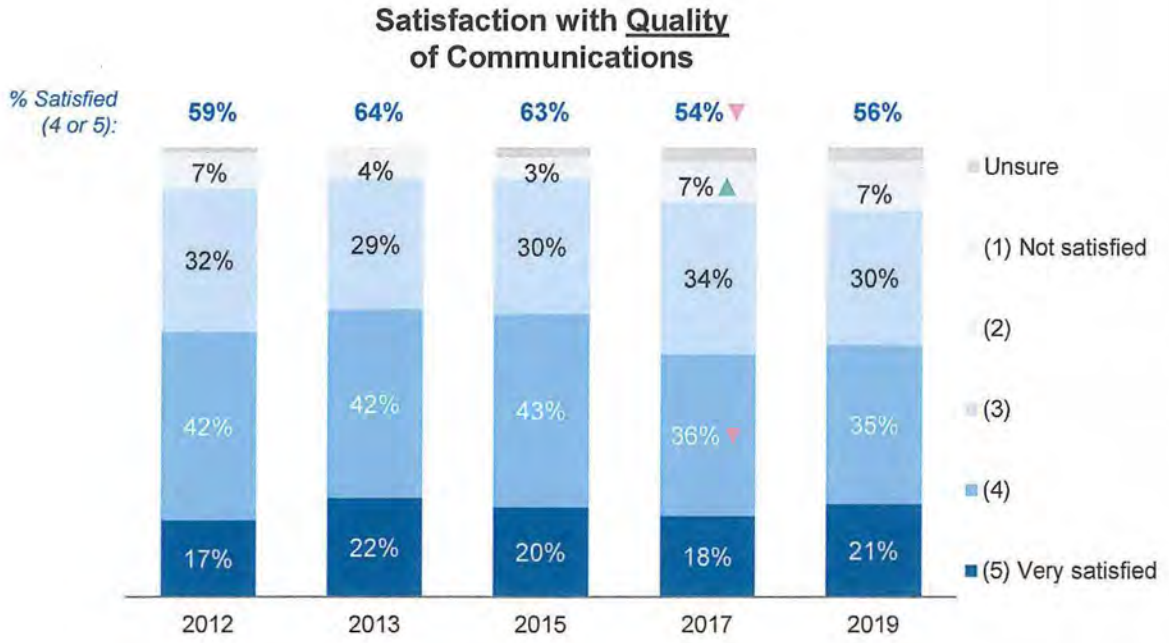
DETAILED FINDINGS:
City Communications

Satisfaction With Communication Frequency



▲ ▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q12 -- Turning now to how the City of Leduc communicates with residents ... how satisfied are you with how frequently the City communicates with residents? (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

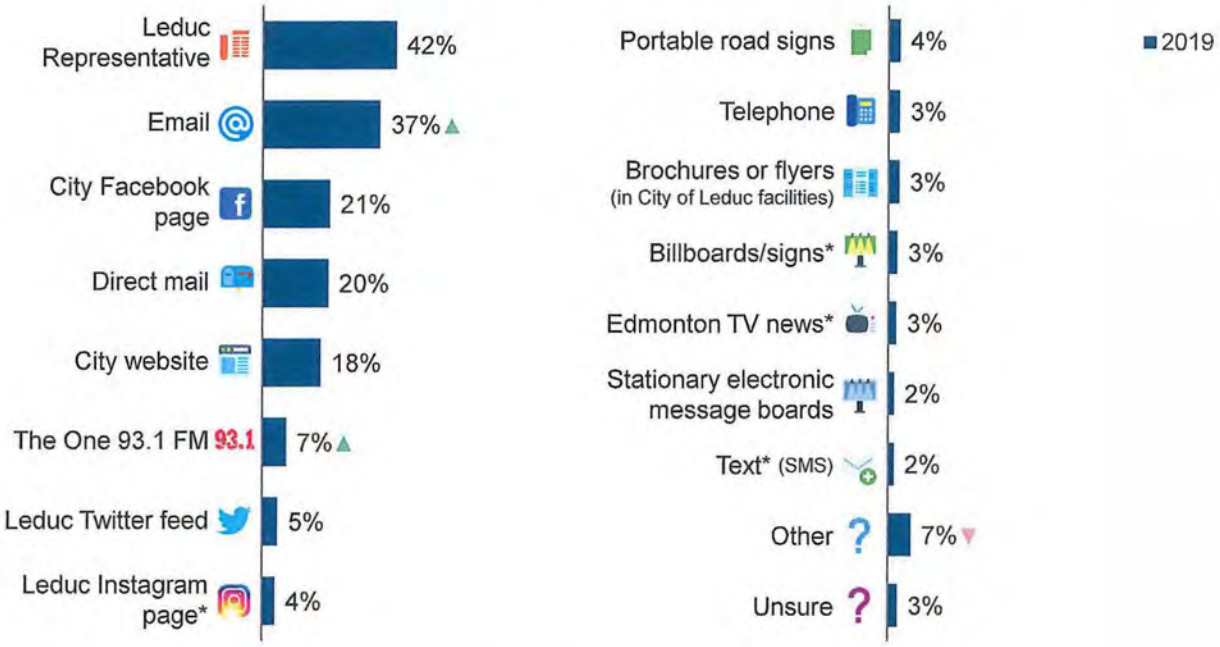
Satisfaction With Communication Quality



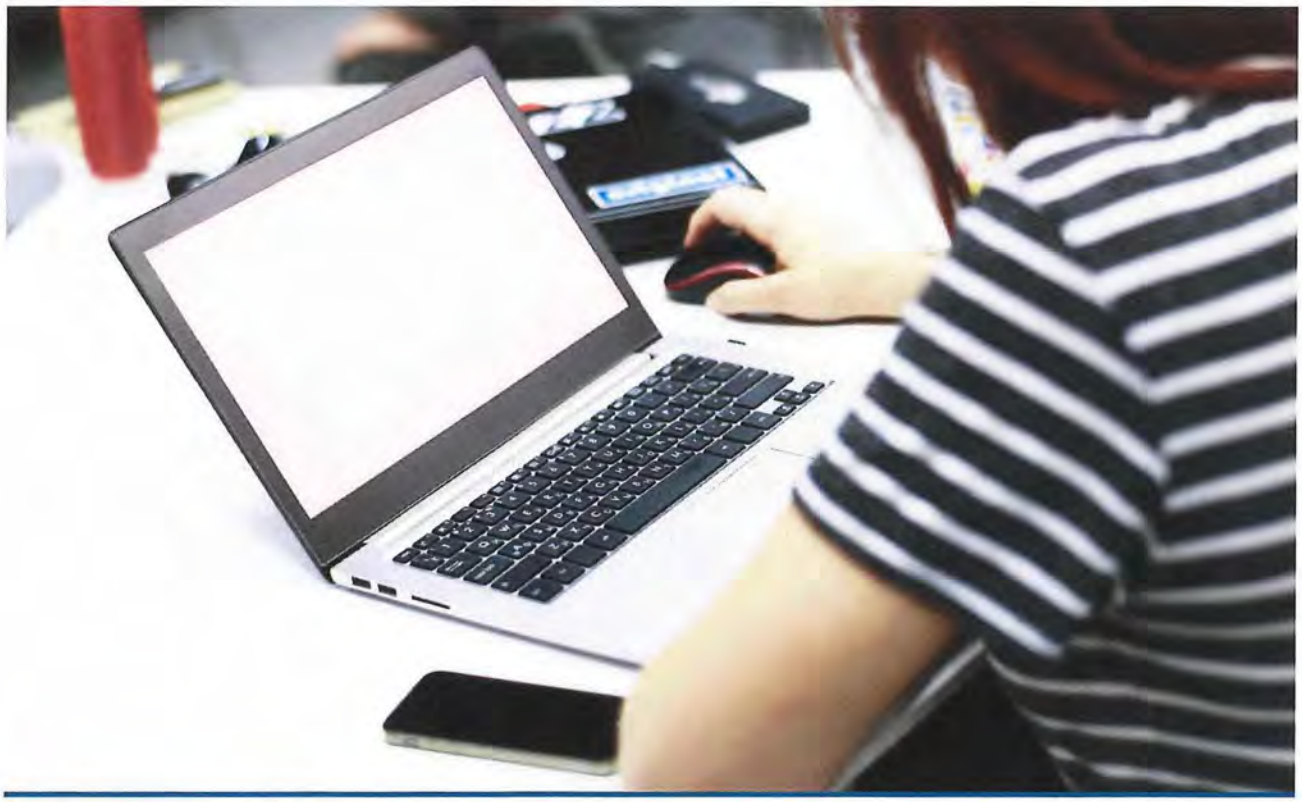
▲ ▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q12 -- Turning now to how the City of Leduc communicates with residents ... how satisfied are you with the overall quality of communication from the City? (Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Preferred Source for City Information

What source would you prefer to receive City of Leduc news from?

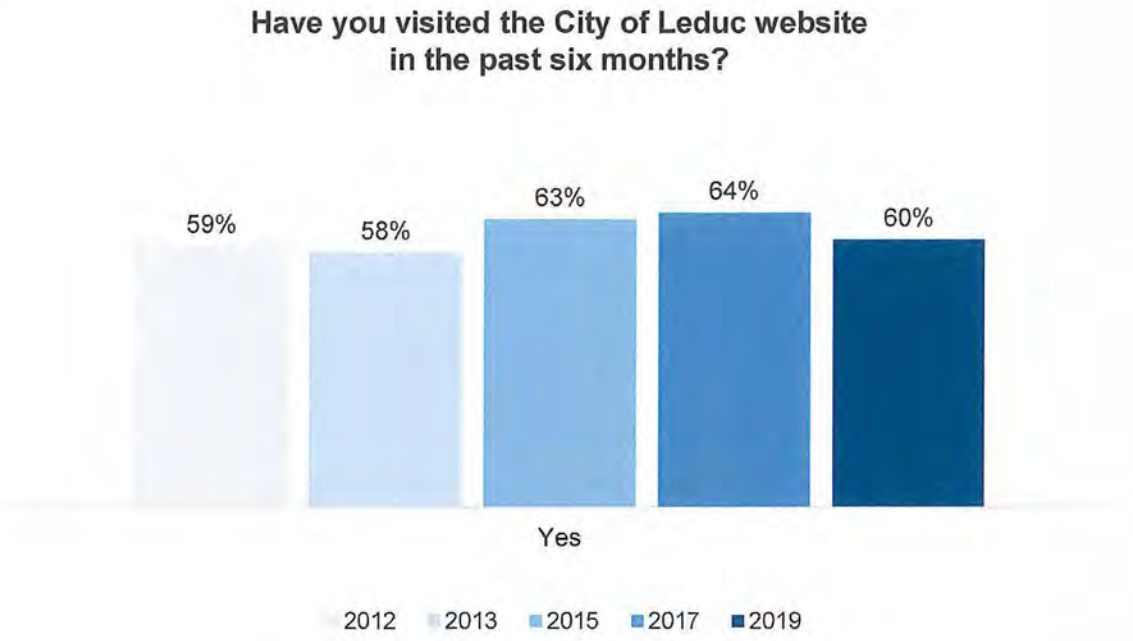


▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
**New categories listed for 2019*
Q13 -- What source would you prefer to receive City of Leduc news from? Any others? (2019 n=404)



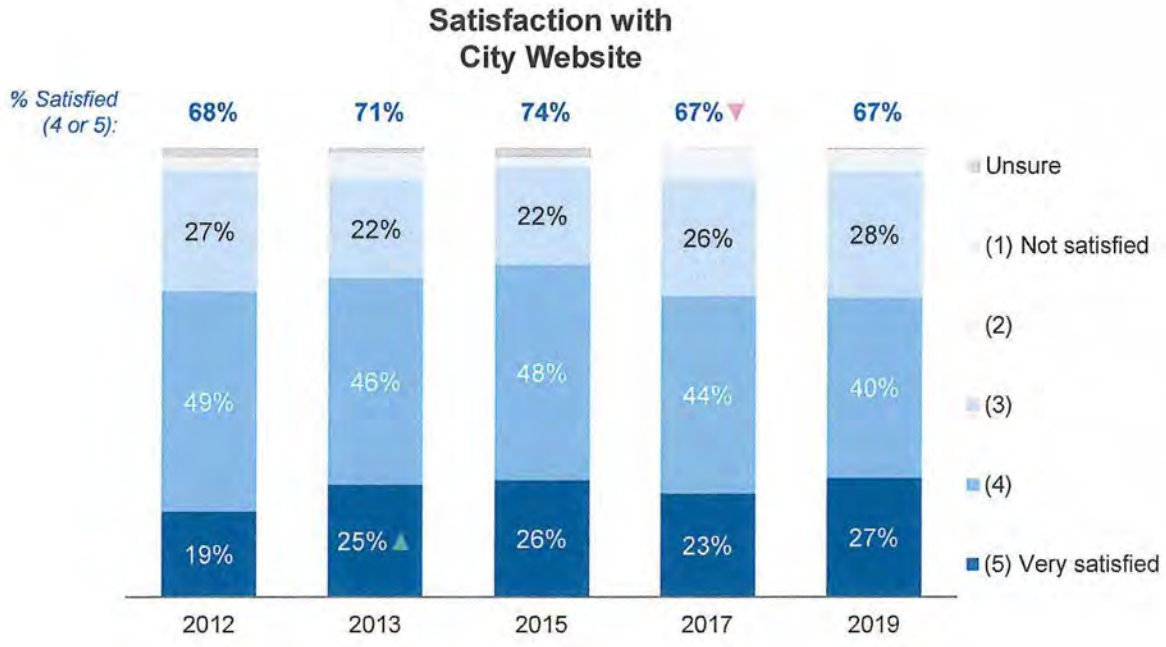
DETAILED FINDINGS:
City Website

Website Visitation



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q14 -- Have you visited the City of Leduc website in the past six months?
(Base: All respondents. 2019 n=404; base for all previous years assumed to be n=400)

Satisfaction with City Website

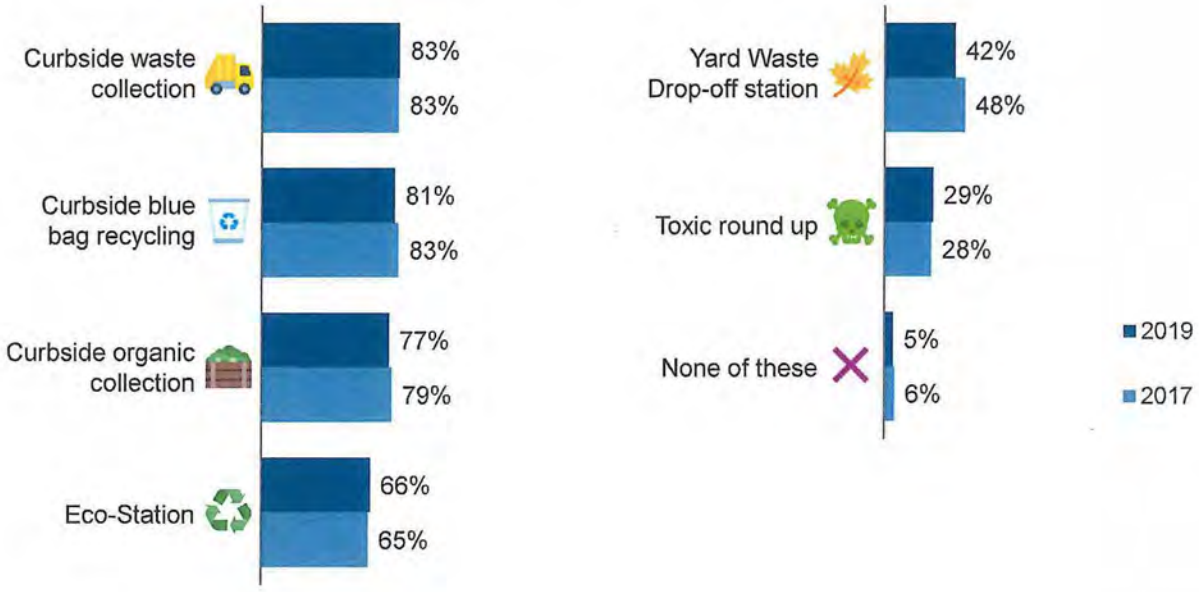


▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*
Q15 -- Overall, how satisfied are you with the City of Leduc website, using a scale from 1 to 5 where 1 means not at all satisfied and 5 means very satisfied? (Base: Visited website. 2019 n=241; assumed bases for previous years are: 2017 n=256, 2015 n=252, 2013 n=232, 2012 n=236)

DETAILED FINDINGS:
Waste & Recycling Services

Usage of Waste & Recycling Services

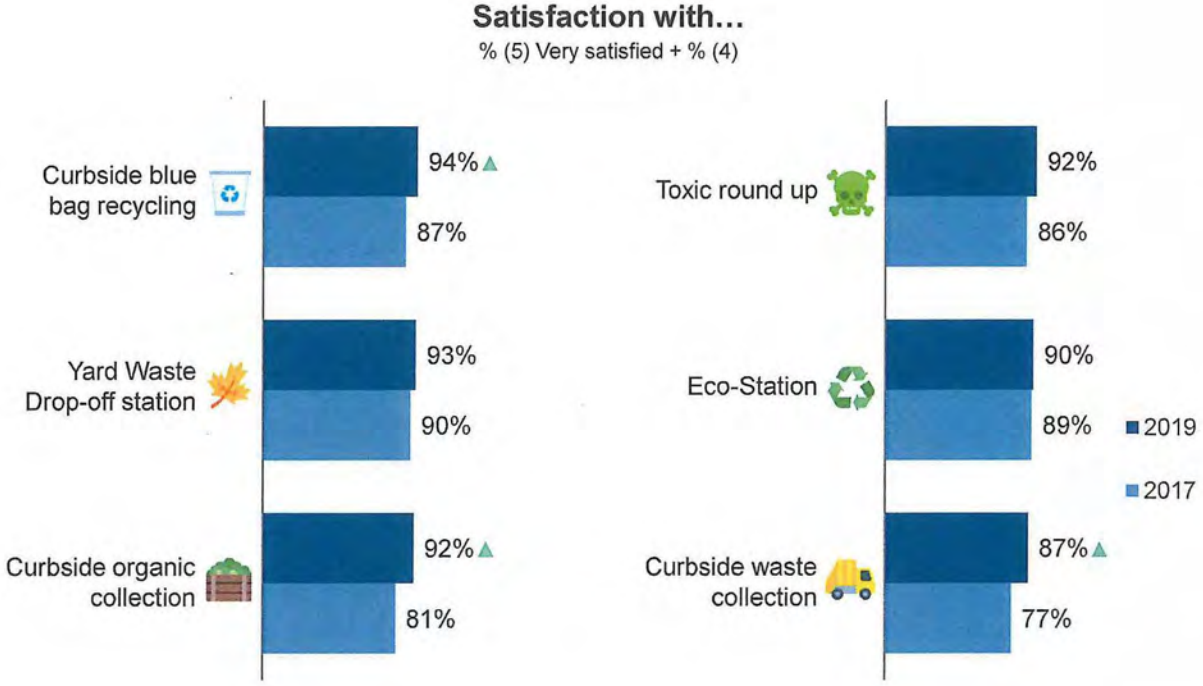
Which of the following City of Leduc services you have used or participated in during the past 12 months?



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*

Q16 -- Turning now to some more specific questions about waste and recycling services… please indicate which of the following City of Leduc services you have used or participated in during the past 12 months. (2019 n=404; base for 2017 assumed to be n=400)

Satisfaction With Waste & Recycling Services



▲▼ *Indicates that score is statistically higher or lower than the previous year (95% confidence level)*

Q17 -- Using a scale from 1 to 5 where 1 means you were 'not at all satisfied' and 5 means you were 'very satisfied', how satisfied were you with...? (Base: All respondents. 2019 n=142-344; bases for 2017 assumed to be n=112-332)

SUMMARY

Key Findings

QUALITY OF LIFE & COMMUNITY DIRECTION

78% (no change) Overall quality of life **excellent** or **very good**

Top contributors to high QoL:

Top contributors to low QoL:

+37 (no change) **Net Promoter Score**

88% (no change) Leduc on **right** track

Top priorities facing Leduc:

SATISFACTION WITH CITY SERVICES

76% (no change) **Somewhat** or **very** satisfied with services

Top rated services:

89% 86% 82%

81% 77% 75%

Lower rated services:

47% 46% 42%

39% 34%

83% (up from 73%) Quality of services has **remained the same**

CITY COMMUNICATIONS & WEBSITE

50% (no change) **Somewhat** or **very** satisfied with frequency of communication

56% (no change) **Somewhat** or **very** satisfied with overall quality of communication

Most preferred channels:

WASTE & RECYCLING SERVICES

87-94% (no change) **Somewhat** or **very** satisfied with waste & recycling services

Most commonly used services:

www.advanis.net

PRIMARY CONTACT:
Patrick Kyba
patrick_kyba@advanis.net
780.229.1135

Marcus Hunke
mhunke@advanis.net
780.229.1148

Robert Latimer
rlatimer@advanis.net
780.229.1130

Condominium Tax & Services Review

Regular Meeting of Council

April 29, 2019

Presented by:
Irene Sasyniuk, GM, Corporate Services

CITY OF Leduc

Prior Council CoW Considerations

1. Condominium Mill Rate Review – March 12, 2018
2. Condominium Tax Update – June 25, 2018
3. Meeting with Condominium Reps – July 3, 2018
4. City Services to Condominiums – October 15, 2018
5. Private Hydrant Inspection Services – March 19, 2019

Request for separate mill rate

Research revealed that of 23 Alberta municipalities reviewed

- None have a separate mill rate for condos that are primary residences
- 7 of the 23 have higher mill rates for condos that are income generating
- Current mill rate structure helps shelter condos from major market swings in assessment

Property Taxation Framework

- No correlation between the services provided and taxation levied on properties
- **Taxes are based upon assessed value of the property and not on the use or availability of the services**
- From 2019 onward, the approach by our contracted assessor has been refined to reflect market conditions for specific condo neighborhoods (rather than all condos within the City)

Provision of City Services

- All services are provided to all residents on an equal basis, including snow removal (done on all public streets)
- Condo owners do not receive waste collection and are not charged the $22.50/mo environmental fee

July 3/18 Meeting w/Condominium Owners - Requests

The following requests have been or can be accommodated:

- ✓ Creation of Condominium Board contact list/database
- ✓ LED Street lights
- ✓ Water meter minimum charges for meters only used in summer for lawn care
- ✓ Fire hydrant inspections

July 3/18 Meeting w/Condominium Owners - Requests

It would be very difficult and inequitable to accommodate the following requests for private residences/property:

- Outside lights on individual units
- Blue bag and waste pickup – infrastructure limitations and requires a $22.50/mo charge
- Snow removal – on private property
- Snow disposal – requirement for engineered snow disposal sites
- Road maintenance contracts – could increase condo owners' costs (see additional reasons cited in report)

July 3/18 Meeting w/Condominium Owners - Requests

Request to inspect all condo fire hydrants:

It is recommended that the City take over the inspection of all fire hydrants for condominium owners if Council approves a motion to cover the cost of the inspections and lost revenue ($13.6k annually).

Latest Request

1. That Council waive the education portion of taxes for seniors

2. That Council institute a 10% tax reduction for condominium owners

It is recommended that the above requests be denied as all other homeowners within the City would incur substantial increases to their taxes to offset these reductions.

Improvements / Requests that have been accommodated

- ✓ Condominium Board contact list/database
- ✓ LED Street lights
- ✓ Water meter minimum charges for meters only used in summer for lawn care
- ✓ Fire hydrant inspections
- ✓ Assessment approach refined (within legislated parameters)

Recommendations

1. That Council approve the expansion of the City's hydrant inspection program to include private hydrants located in condominiums and apartments with no additional charges administered for the inspections. And that Council approve funding of $13,600 for 2019 from the Water Reserve with the ongoing cost to be imbedded in operational budgets on a go forward basis.

Recommendations

3. That Council retain the current mill rate structure for property taxes for multi-family properties, including condominiums.

2019 Property Tax Rate
Bylaw 1017-2019
Second and Third Reading

Presented by:
Jennifer Cannon, Director, Finance
Gino Damo, Manager, Revenue Services

CITY OF Leduc

2019-2021 Budget alignment with Council's Strategic Goals

Maintain Service Levels

- A City Where People Want to Live, Work, and Play
- A City with a Plan for the Future
- An Economically Prosperous City and Region
- A Collaborative Community-Builder and Regional Partner

CITY OF Leduc

Budget Approval December 3, 2018

	2019	2020	2021
Base Operational & Capital Requirements	0.83%	2.39%	3.15%
RCMP	1.32%	1.32%	-
Enhanced Transit	0.74%	0.74%	0.74%
Partnership Opportunities	-	-	1.16%
Tax Revenue Increase	2.89%	4.45%	5.05%

Revised Tax Revenue Increase 2019 to 2021 Multi-Year Tax Strategy

	2019	2020	2021
Base Operational & Capital Requirements	0.83%	2.39%	3.15%
RCMP	1.32%	1.32%	-
Enhanced Transit	0.63%	0.63%	0.74%
Partnership Opportunities	-	-	1.16%
Proposed Tax Revenue Increase	2.78%	4.34%	5.05%
Proposed Target		2.00% to 3.00%	2.00% to 3.00%

Revised Strategy

Reduction of $100K for Enhanced Transit

What the 2019 Budget Brings

Maintain Service Levels

A City Where People Want to Live, Work, and Play

- Protective Services Building Expansion
- Telford Lake Trails
- Increased focus on arts and culture within Leduc

A City with a Plan for the Future

- Energy Efficiency Initiatives
- Implementing the IT Strategic Plan (supporting open government, open data, smart cities)

An Economically Prosperous City and Region

- Sport Tourism Events (e.g. Rogers Hometown Hockey)
- 65th Avenue Interchange – Detailed Design
- Continued focus on Economic Development

A Collaborative Community-Builder and Regional Partner

- Leduc Transit-Regional Collaboration
- LED Streetlight Conversion Partnership
- Continued focus on Regional Partnerships

Enhanced Service Levels

Youth Wellness

LRC seniors – Facility Access

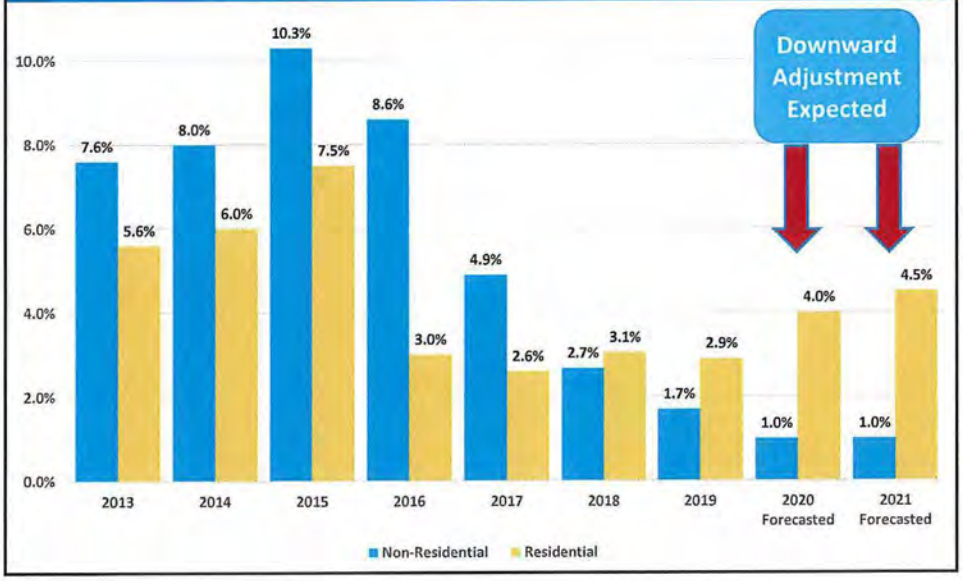
Over 500 New Memberships In The First Month!

Waste Diversion Public Education Initiative

Enhanced Client Services

FCSS
Family & Community Support Services

Residential & Non-Residential Growth



Provincial Education Property Tax

As the final Provincial Education Requisition has not been received due to delays related to the provincial election, the City of Leduc is forecasting the provincial education tax in order to meet legislated deadlines for property tax notices and assessment.

1. **2019 Property Tax Rate Bylaw uses the average for the last five years for Residential and Non-Residential.**
2. **A conscientious approach was taken to do our best to avoid compounding the rate going into 2020 as the money we collect is a direct flow-through to the Government of Alberta.**
3. **As this is purely an estimate, adjustments will be required in 2020 to reflect any difference between the actual 2019 requisition and our forecasted estimates.**

Estimated Tax Increase

	Annual	Monthly
Municipal	$ 94	$ 8
Provincial	$ 42	$ 3
Total Estimated Tax Increase	**$ 136**	**$ 11**

*Based on home assessed at $350,000

Next Steps

MAY 15 2019 Property Tax Notice Mailing Date

JUNE 20 Assessors Open House Civic Centre 1pm-7pm

JUNE 25 Assessors Open House Civic Centre 1pm-7pm

JUNE 28 2019 Property Taxes Due Date

JULY 22 Assessment Complaint Deadline Date

Recommendation

That Council give Bylaw No. 1017-2019 Second and Third Reading.

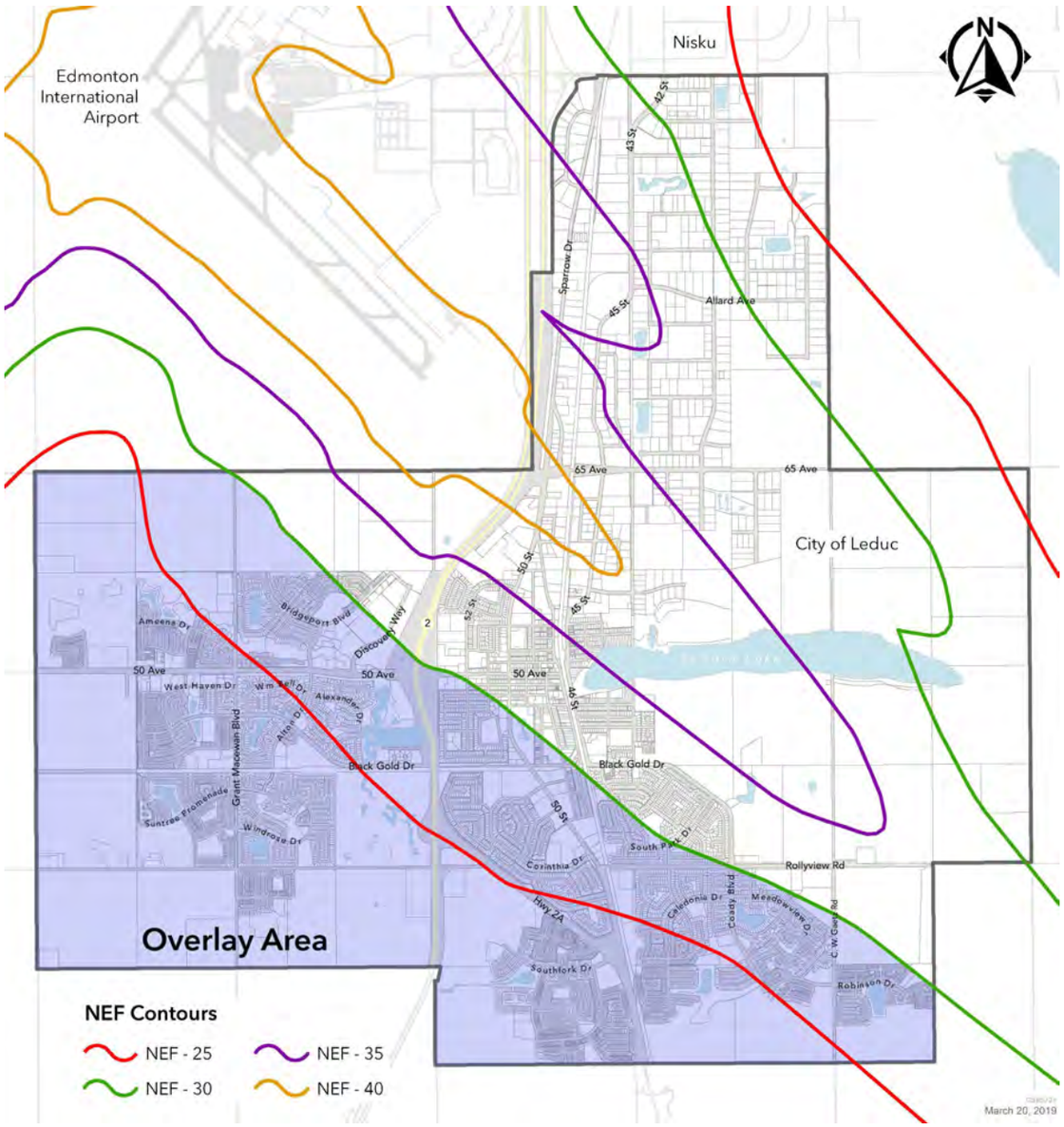
NOTICE OF PUBLIC HEARING
PROPOSED AMENDMENT TO LAND USE BYLAW
The Following Information is Common to the Bylaw Presented

The City of Leduc Land Use Bylaw 809-2013 regulates and controls the use and development of land and buildings within the City of Leduc. To amend the existing regulations under the Land Use Bylaw, the proposed amendment must be published to allow citizens an opportunity to clarify what is proposed, ask questions, or present objections at a required public hearing held prior to Council approving the amendment.

Bylaw No. 1023-2019

The purpose of proposed Bylaw No. 1023-2019 is to amend Land Use Bylaw No. 809-2018 to provide clarity to the language within the Land Use Bylaw. One of the more significant areas of amendment is related to the addition of secondary suite dwellings within both duplex and townhouse units to increase housing affordability while also allowing opportunity for infill development. An overlay is proposed in order to allow secondary suites in duplexes and townhouse units as a discretionary use in areas not conflicting with the Edmonton International Airport Vicinity Protection Area Regulation.

A copy of the proposed Bylaw that will be presented to City Council may be inspected by the public between the hours of 8:30 a.m. and 12:00 noon and 1:00 p.m. and 4:30 p.m. at the Office of the City Clerk, City Hall, Leduc Civic Centre, 1 Alexandra Park, 46th Avenue and 48A Street, Leduc, Alberta. Inquiries respecting the proposed Bylaw may be made at this office or by contacting April Renneberg at the Planning & Development Department at 780-980-8439. A copy of the proposed bylaw may also be viewed on the City's website.



Public Hearing – May 13, 2019

At its meeting on **Monday, May 13, 2019 at 7:00 p.m.** or as soon thereafter as may be convenient, in the Council Chambers, City Hall, Leduc Civic Centre, 1 Alexandra Park, 46th Avenue and 48A Street, Leduc, City Council will hold a public hearing on the proposed bylaw. All interested persons may be heard by Council prior to the proposed bylaw being considered for second reading.

Any person, who wishes to speak to City Council at the time of the public hearing is requested to advise the City Clerk's Office, at 780-980-7177 before 12:00 noon, Monday, May 13, 2019. They may also be heard by responding to the Mayor's call for delegations at the time of the public hearing. Written submissions must be submitted to the City Clerk's Office, City Hall, before **12:00 noon, Friday, May 10, 2019.**

This notice is being advertised in the April 26 and May 3, 2019 issues of this newspaper.

AMENDMENT #94 - TO BYLAW NO. 809-2013, THE LAND USE BYLAW

The *Municipal Government Act*, R.S.A. 2000, Chapter M-26, as amended (the "Act") grants a municipality the authority to pass a Land Use Bylaw;

AND: in accordance with the Act, the City of Leduc passed Land Use Bylaw No. 809-2013 to regulate and control the use and Development of land and buildings in the City of Leduc, and the Council has deemed it expedient and necessary to amend Bylaw No. 809-2013;

AND: notice of intention to pass this bylaw has been given and a public hearing has been held in accordance with the Act;

THEREFORE: the Council of the City of Leduc in the Province of Alberta duly assembled hereby enacts as follows:

PART I: APPLICATION

That Bylaw No. 809-2013 be amended as follows:

1. Section 3.4.4.1. is amended by adding "unless the direct control provision specifically says otherwise" to the end of the regulation.

2. Section 8.2 Table 2: Development, Activities and Uses That Do Not Require a Development Permit is amended as follows:
   i) Hard Surfacing is deleted and substituted with:

"Hard Surfacing	RV Parking, assuming it complies with Section 21.8.3, 21.8.4 or 21.8.6, or the Hard Surfacing of any area that is part of a Development for which a Development Permit has been issued, for the purpose of providing vehicle or pedestrian access or parking."

   ii) Stripping Site Grading or Excavation is deleted and substituted with:

"Stripping Site Grading or Excavation	Stripping, Site grading or Excavation that is part of a Development for which a Development Permit has been issued or a development agreement entered into."

3. Section 9.2.2. is amended by replacing 'Policy 61.008' with 'Section 10.5.3.1'.

4. Section 10.3.8. is deleted.

5. Section 11.1.3.1. is amended by adding the following at the end of the section: "Consideration for Secondary Suite Dwelling Development provides intensification opportunities in this District."

6. Section 11.3 Table 4: Single Detached Dwelling in the RSE District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

7. Section 11.5 Table 6: Single Detached Dwelling in the RSD District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16m^2".

8. Section 11.5 Table 6: Single Detached Dwelling in the RSD District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

9. Section 11.5 Table 7: Duplex Side-By-Side Dwelling in the RSD District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

10. Section 11.5 Table 7: Duplex Side-By-Side Dwelling in the RSD District, Dwelling Density Maximum is amended by deleting "Maximum Dwelling Unit Density of one (1) unit per Parcel" and substituting it with "Two (2) units per Parcel".

11. Section 11.7 Table 9: Single Detached Dwelling in the RNL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

12. Section 11.7 Table 9: Single Detached Dwelling in the RNL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

13. Section 11.8.6 is deleted and substituted with the following:

"11.8.6. Minimum Lot Widths and Lot Areas may be reduced, if a Development complies with Section 11.8.4., as follows:

11.8.6.1. Where the proposed Development has primary access from a Lane, the Lot width may be a minimum of 7.6 m (10.0 m on a Corner Lot), with a minimum Lot area of 258.4 m^2 (340.0 m^2 on a Corner Lot); and

11.8.6.2. Where the proposed Development has primary access from a front street, the Lot width may be a minimum of 9.2 m (11.6 m on a Corner Lot), with a minimum Lot area of 312.8 m^2 (394.4 m^2 on a Corner Lot)."

14. Section 11.9 Table 11: Single Detached Dwelling in the RSL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

15. Section 11.9 Table 11: Single Detached Dwelling in the RSL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

16. Section 11.9 Table 12: Duplex Side-By-Side Dwelling in the RSL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

17. Section 11.9 Table 12: Duplex Side-By-Side Dwelling in the RSL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

18. Section 12.3.2.4. is deleted.

19. Section 12.4 Table 16: Duplex Stacked Dwelling, Triplex Dwelling, and Fourplex Dwelling in the MUR District is amended as follows:

i) The row for Amenity Area is deleted and substituted with:

	Duplex Stacked Dwelling	Triplex Dwelling	Fourplex Dwelling
"Amenity Area (Rear Yard) Minimum (Only applicable For rear detached Garage)	16 m^2	16 m^2	16 m^2"

ii) The row for Building Height Maximum is deleted and substituted with:

	Duplex Stacked Dwelling	Triplex Dwelling	Fourplex Dwelling
"Building Height Maximum	12.0 m	12.0 m	12.0 m"

20. Section 12.4 Table 17: Townhouse Dwelling in the MUR District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

21. Section 12.4 Table 17: Townhouse Dwelling in the MUR District, Building Height Maximum is amended by deleting "Three (3) Storeys and 12.0 m" and substituting it with "12.0 m".

22. Section 12.4 Table 18: Commercial Community Educational & Recreational Uses in the MUR District, Building Height Maximum is amended by deleting "Three (3) Storeys and 12.0 m" and substituting it with "12.0 m".

23. Section 12.7 Table 19: Permitted and Discretionary Land Use Classes MUN – Mixed Use Neighbourhood is amended by substituting discretionary use "Dwelling, Apartment (4 or more Storeys)" with "Dwelling, Apartment (5 or more Storeys)".

24. Section 12.7 Table 20: Apartment Dwelling – One (1) to Four (4) Storeys in the MUN District, Building Height Maximum is amended by deleting "Four (4) Storeys and 17.0 m to provide flexibility for roof designs" and substituting it with "17.0 m".

25. Section 12.10. Table 21: Permitted and Discretionary Land Use Classes MUC – Mixed Use Comprehensive is amended by substituting permitted use "Dwelling, Apartment (4 or more Storeys)" with "Dwelling, Apartment (5 or more Storeys)".

26. Section 12.10. Table 22: Apartment Dwelling – Four (4) or More Storeys in the MUC District be amended by changing the headings from "Apartment Dwelling – Four (4) or more Storeys" to "Apartment Dwelling – Five (5) or more Storeys."

27. Section 12.10. Table 22: Apartment Dwelling – Four (4) to Ten (10) Storeys in the MUC District, Building Height Maximum is amended by deleting "Ten (10) Storeys 33.3 m" and substituting it with "33.3 m".

28. Section 14.5.1.1. is amended by replacing "Industrial, General developments" with "Developments in this district".

29. Section 14.5.1.2. is deleted.

30. Section 14.5.5. is amended by replacing "classed as Industrial – General under this Bylaw where the industrial activity" with "within this district where the business activity".

31. Section 14.8. Table 33.1: Permitted and Discretionary Land Use Classes IBL – Business Light Industrial is amended by adding 'Pet Care Service' as a Permitted Use.

32. Section 14.9. is amended by adding the following sections after 14.9.3.:

"14.9.4. Any Pet Care Service within this district shall be limited to locations south of 65 Avenue.

14.9.5. Adverse Effects or Nuisances for Proposed Development

14.9.5.1. Developments in this district shall not have any significant adverse effect of nuisance created or apparent outside the Principal Building.

14.9.5.2. Buildings that have been brought to the Site prebuilt shall be visually compatible with the Site, in the opinion of the Development Authority, and may require a Development Permit.

14.9.6. Despite Table 33.1: Permitted and Discretionary Land Use Classes IBL – Business Light Industrial, any us within this district where the business activity occurs both inside and outside the Principal Building shall be treated as a Discretionary Use within the IBL land use district."

33. The following section is added after 18.10.4.2.:

"18.11. Infill Overlay

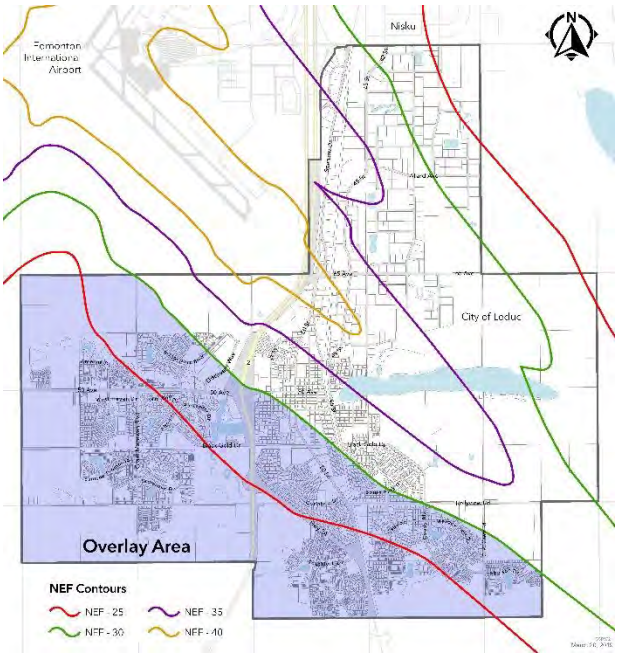
18.11.1. Purpose

18.11.1.1. The purpose of this Overlay is to enable residential infill development and overall densification by allowing alternative residential development opportunities while respecting the regulations imposed by the Edmonton International Airport Vicinity Protection Area (AVPA) Regulation.

18.11.2. Applicability

18.11.2.1. This Overlay shall apply to the area outlined in Figure 3.4: City of Leduc Infill Overlay Area.

Figure 3.4: City of Leduc Infill Overlay



18.11.2.2. In accordance with Schedule 2, Section 3 of the AVPA Regulation, any Parcel bisected by the 30 NEF contour:
1) 0.2 ha or less in size is not subject to this Overlay; or
2) greater than 0.2 ha in size may be subject to this Overlay, subject to Schedule 2, Section 3(2) of the AVPA Regulation.

18.11.3. Interpretation

18.11.3.1. Development within this Overlay shall be evaluated with respect to compliance with the underlying district and all other provisions of this Bylaw where not specifically overridden by this Overlay. In the case of conflicting regulations within this Overlay and other sections of the Land Use Bylaw, interpretation of the applicable regulation is dependent upon the Development Authority's discretion.

18.11.3.2. For the purpose of this Overlay, Dwelling, Secondary Suite shall be defined as follows:
Dwelling, Secondary Suite – means Development consisting of a Dwelling located within, and accessory to, a Structure in which the Principal Use is a Single Detached Dwelling, Duplex Side-by-Side Dwelling or Townhouse Dwelling. A Secondary Suite Dwelling has cooking facilities, sleeping facilities and sanitary facilities which are separate from those of the Principal Dwelling within the Structure. For the purpose of this clause, "cooking facilities" includes any stove, hotplate, oven, microwave oven, toaster oven or electric griddle, as well as any wiring or piping containing the energy or power source for such facilities. A Secondary Suite Dwelling also has an entrance separate from the entrance to the Principal Dwelling, either from a common indoor landing or directly from the exterior of the Structure. A Secondary Suite Dwelling shall not be subject to separation from the Principal Dwelling through a Condominium conversion or Subdivision. This Land Use includes the Development or conversion of existing Basement space or above-Grade space to a separate Dwelling. This Land Use does not include Duplex Stacked Dwelling, Fourplex Dwelling, Triplex Dwelling, Apartment Dwelling, Garage Suite Dwelling, Garden Suite Dwelling, or Boarding Facility.

18.11.4. Land Uses

18.11.4.1. Permitted and Discretionary Uses within this Overlay shall follow those in the underlying Land Use District but shall allow Dwelling, Secondary Suite as a Discretionary Use where the Principal Use is either a Dwelling, Single Detached; Dwelling, Duplex Side-by-Side; or Dwelling, Townhouse.

18.11.5. Site Subdivision Regulations

18.11.5.1. Dwelling Density maximum shall be as follows:

1) Single Detached – maximum 2 Dwelling Units;
2) Duplex Side-by-Side – maximum 4 Dwelling Units; and
3) Townhouse – maximum 12 Dwelling Units."

34. Section 21.1.1.8. is deleted and the following section is substituted:

"21.1.1.8. Accessory Developments are permitted in a district when accessory to a Principal Use for which a Development Permit has been issued."

35. Section 21.1.5. is amended by adding the following new section after Section 21.1.5.1.:

"21.1.5.2. For properties where the Dwelling is approved with a 0 m side yard, the side yard Setback for the attached Deck can also be reduced to 0 m."

36. Section 21.7.2.2 3)(a) is amended by replacing "6.5 m" with "7.1 m".

37. Section 22.5.4. is deleted.

38. Section 24.1.1.12. is deleted and the following section is substituted:

"24.1.1.12. temporary Signs that are required under this Bylaw or for a statutory plan to identify a site with an application in for a proposed Bylaw adoption or amendment;"

39. Section 26.0 Table 48: Glossary of Terms and Uses is amended by striking out "or Education facilities" from the definition for Government Service.

PART II: ENACTMENT

This Bylaw shall come into force and effect when it receives Third Reading and is duly signed.

READ A FIRST TIME IN COUNCIL THIS _____ DAY OF _____, AD 2019.

READ A SECOND TIME IN COUNCIL THIS _____ DAY OF _____, AD 2019.

READ A THIRD TIME IN COUNCIL AND FINALLY PASSED THIS _____ DAY OF _____, AD 2019.

_____
Robert Young
MAYOR

_____
Sandra Davis
CITY CLERK

_____
Date Signed

COUNCIL REQUEST FOR DECISION

MEETING DATE: May 13, 2019

SUBMITTED BY: Shawn Olson, Director, Engineering

PREPARED BY: Kerra Chomlak, Environmental Sustainability Coordinator

REPORT TITLE: Greenhouse Gas Reduction Action Plan Approval

REPORT SUMMARY

The Greenhouse Gas Reduction Action Plan engagement process with public, stakeholders, staff and Council is now complete. The final target and Plan is being presented for Council approval.

RECOMMENDATION

1. That Council approve the overall target of 3% below business-as-usual projections by 2030. This target can also be broken down into the following components based on the FCM Partners for Climate Protection (PCP) program format:

   Corporate Target: 8% reduction from 2015 by 2030 (equivalent to 20% reduction below business-as-usual forecast)

   Community Target: 6% above 2015 by 2030 (equivalent to 3% reduction below business-as-usual forecast)

2. That Council approve the City of Leduc Greenhouse Gas (GHG) Reduction Action Plan.

BACKGROUND

KEY ISSUE(S) / CONTEXT:

A detailed modelling process was undertaken to outline the greenhouse gas reductions associated with various actions in a high, medium and low scenario. Council has reviewed the costs associated with each scenario, and given the current economic conditions, is supportive of the 3% target and low scenario actions. Any other actions from the medium and high scenarios will be assessed annually through the regular budget process. **Approval of the plan does not assume approval of the costs outlined for the medium and high scenario actions.**

PAST COUNCIL CONSIDERATION:

In June 2016, Council passed a resolution to join the FCM's PCP program. In late 2017, an FCM Municipalities for Climate Innovation Program grant was received for $113,000. On April 9, 2018, Committee-of-the-Whole heard a presentation on: the GHG inventory, the process for consulting the public and stakeholders, and actions that could be included in a plan. Individual members of Council attended the Climate Management Express Workshop on April 25, 2018, the GHG Plan Stakeholder Workshop on May 15, 2018 and the January 23, 2019 final open house. LEAB is acting as the official advisory group for the project, and a multi-departmental staff project team has been engaged throughout the project. On October 22, 2018, Committee-of-the Whole heard the "What We Heard" presentation on the results of the consultation, and reviewed a draft list of actions and potential reduction targets. On April 15, 2019, Committee-of-the-Whole heard a presentation on all of the costs associated with each scenario, including operating, capital and staffing costs.

CITY OF LEDUC PLANS:

Relevant plans include: MDP, Environmental Plan, Weather and Climate Readiness Plan, Integrated Pest Management Plan, Urban Forestry Plan.

IMPLICATIONS OF RECOMMENDATION

ORGANIZATIONAL:
A staff team was engaged throughout the development of the Plan, and appropriate departments have signed off on the actions in the plan that affect them (Planning, Facilities, Transit, Public Services, Finance).

FINANCIAL:
If Council approves the 3% target, there are no financial implications of the Plan at this time.

POLICY:
The Greenhouse Gas Action Plan is a stand alone plan, and will be submitted to the Federation of Canadian Municipalities' Partners for Climate Protection Program.

IMPLEMENTATION / COMMUNICATIONS:
Environmental Services and Communications and Marketing Services will work together on an appropriate plan for announcing the Plan and Targets.

Once approved Administration will conduct an annual assessment of the plan to identify potential actions from the medium and high scenario that may be undertaken considering grant opportunities and available human and financial resources. Administration will bring forward feasible actions in the annual budget process.

Administration will report annually to the public on implementation of the actions and progress towards the targets in the existing Environmental Progress Report.

ALTERNATIVES:
List numerically action alternatives to the recommendation outlined at the top of this report.

1. Approve an alternate target.
2. Direct Administration to make changes to the Plan.
3. Direct Administration to conduct a variation on the annual assessment.

ATTACHMENTS:
1. City of Leduc *Greenhouse Gas Reduction Action Plan* 2020-2030, which includes Appendix A - City of Leduc Costs
2. Appendix B – Technical Modelling Assumptions Report
3. Appendix C – What We Heard Report

Approval Information
(Remove any signature blocks that are not required for this report.)
(Approval Information must not appear alone on a separate page.)

X City Manager		X GM - Comm Serv & PS
X GM - Corp Serv	X GM - Infras & Plan	X Director - Finance

CITY OF LEDUC

Greenhouse Gas Reduction

ACTION PLAN 2020 - 2030

MAY 2019

CITY OF Leduc

Leduc.ca

Acknowledgements

This report was prepared for the City of Leduc by All One Sky Foundation. If you have any questions or comments regarding the information included in this report, please contact:

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As outlined in *Appendix C*, many stakeholders and City of Leduc staff contributed to this report. Acknowledgements are expressed to:

- City of Leduc staff team made up of representatives from various departments including Faculties, Planning, Engineering, Public Services, Public Transportation, Environmental Services, as well as The DAGNY Partnership communications consultants.
- Leduc Environmental Advisory Board (LEAB) for serving as the Advisory Group on this Plan.
- Federation of Canadian Municipalities for providing funding for the engagement process and development of the Plan.

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Executive Summary

Background

The City of Leduc has shown strong environmental leadership over the past several years through initiatives to keep our environment even cleaner and more biodiverse for many years to come. The City of Leduc has already implemented initiatives that save money and reduce greenhouse gas (GHG) emissions because they make good business sense. The City of Leduc's *GHG Reduction Plan* builds on commitments made in the *Municipal Development Plan (2017)*, the *Environmental Plan (2012), and* the *Weather and Climate Readiness Plan (2014).*

This GHG Reduction Plan is the next step in implementing GHG reduction projects that achieve "best bang for buck." It outlines the City of Leduc's commitment to achieve a GHG reduction target and a roadmap on how to achieve it within ten years. The City gathered ideas from the community through surveys, workshops and public information events and materials providing ample opportunity to offer input.

The City of Leduc's GHG Reduction Plan is a made-in-Leduc solution to a global issue. The plan respects unique local priorities, using the lessons learned from established environmental initiatives and others who have tackled similar challenges.

Leduc's GHG Reduction Plan provides a prioritized plan for municipal, community and local residents' actions over the next decade. The plan assigns departmental responsibilities and timelines to ensure accountability to guide progress towards achievement of the GHG reduction target.

The plan, including the GHG reduction target, has been purposefully designed to be pragmatic and responsible, while demonstrating leadership on climate action to inspire residents and businesses to do their part to reduce global GHG emissions. The actions to reduce GHGs are practical, and cost-effective and built with community input.

Inventory

Before a target could be set, an inventory was developed to estimate all of the GHG emissions in the City of Leduc. These are broken down into emissions from activities taken by the broader "community," as well as actions taken by Leduc operations, or the "corporate" emissions. The results of the inventory, using 2015 as a baseline year are below.

By 2030, total community and corporate emissions are projected to rise to 460,740 tonnes of carbon dioxide equivalent (tCO_2e), equivalent to year-on-year average growth of about 0.6% since 2015.

Target

Council, stakeholders and staff agreed early in the process that the future GHG reduction target must be practical, achievable and built from the bottom-up using cost-effective actions as its basis. In other words, the City of Leduc would not endorse a GHG reduction target without a detailed action plan to achieve that target, along with details on the costs and benefits of the actions. Public support for the target and related actions was also imperative for target selection.

Following a detailed engagement process and considering budgetary restraints, Council was presented for their approval an overall GHG reduction target for the City of Leduc.

CITY OF LEDUC GHG REDUCTION TARGET:

Reduce GHG emissions by 3% below business-as-usual projections by 2030.

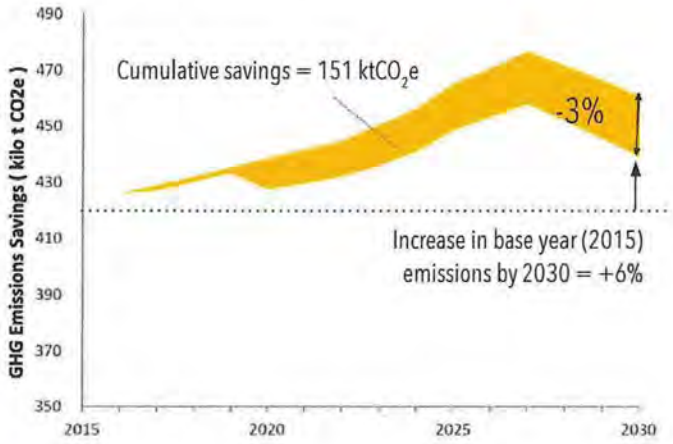
This target can also be described as: 3% above baseline year (2015) emission levels.

Achievement of the City of Leduc GHG reduction target requires actions at both a corporate level and a community level. The corresponding targets are:

- **CORPORATE TARGET:** 20% reduction below business-as-usual by 2030 or at 8% below 2015 levels.
- **COMMUNITY TARGET:** 3% reduction from business-as-usual by 2030 or for emissions at 6% above 2015 levels.

Exhibit 1A

City of Leduc GHG Reduction Target



Note that if all of the actions described in this plan are implemented, (low, medium and high scenarios), the City of Leduc could achieve a **higher target of 9% reduction** below business-as-usual by 2030, or an absolute reduction of 1% below 2015 levels.

If only the low and medium scenario actions are implemented, the city would achieve a 5% reduction below business as usual by 2030, or an absolute reduction of 4% above 2015 levels.

Even though the low scenario target is recommended at this time, due to the fiscal climate, all actions have been retained in the plan to provide the opportunity for City of Leduc to implement them if budget becomes available over the next ten year period. In addition, grants may become available that would enable the City to commit to actions beyond the low scenario. As well, some actions from the medium and high scenarios may be implemented given there is low or no cost to the City of Leduc (e.g. PACE, Organics Diversion Policies and Programs for Businesses and Apartments, Organics Processing Facility). In this case, the City would likely exceed their GHG reduction target of 3%. Progress towards the target will be reviewed annually by City Council.

Community Input

The City of Leduc engaged with the public and key stakeholders to gather their perspectives and input on their GHG Reduction Plan. Engagement activities included:

- communication through a paid print, digital advertising, and a brochure,
- a dedicated section on the Leduc website,
- written feedback through an engagement hub and online survey,
- education and input through a Climate Mitigation Express workshop,
- ongoing input through the Leduc Environmental Advisory Board (LEAB) GHG Reduction Sub-Committee that served as an advisory committee on the plan,
- stakeholder engagement workshop, and
- a public open house.

See Appendix C for detailed information on the consultation process and input received.

What We Heard

A majority of public and stakeholders support GHG reduction actions in Leduc. At the public open house no opposition to the GHG Reduction Actions, the target nor the costs was expressed. The display boards showed all actions in this plan, resulting in a 9% target at cost per average Leduc household of $4 to $5.50 per year for ten years.

The majority of attendees wanted the plan to go further in reducing GHG emissions. Written comments on the open house survey sheet indicated a majority (83% positive) support for a 9% GHG reduction target, and all actions were supported by the majority.

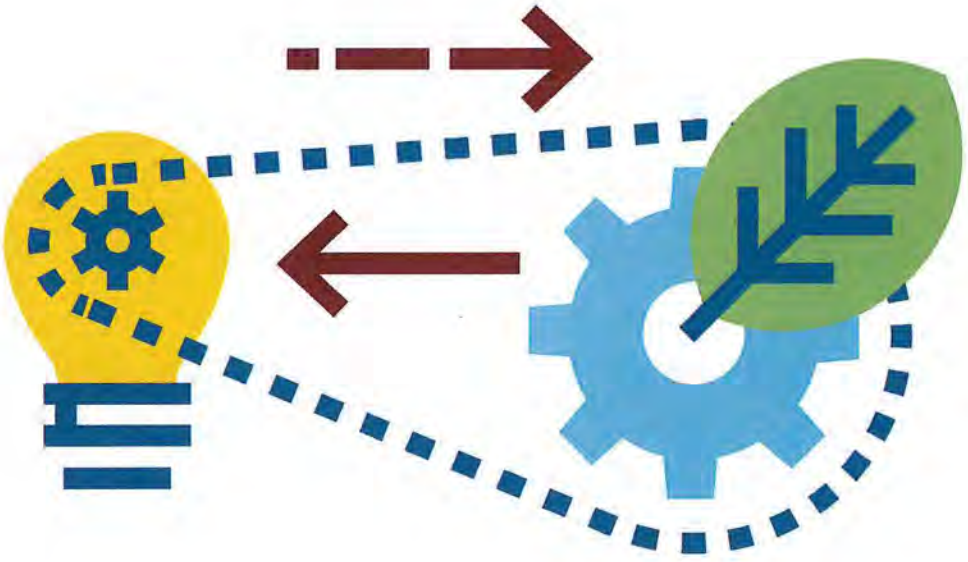
In the detailed survey conducted earlier in the consultation process, the following actions had the highest support:

- **planting trees and preserving natural areas** (93% support action by the City of Leduc as a corporation, and 90% support action by residents and businesses in the community of Leduc),
- **encouraging of composting and recycling** (89% for City action and 87% for community action),
- **improving energy efficiency** (83% and 85%),
- **neighbourhood planning to encourage walking** (75% agree City of Leduc should take action),
- **more walking and biking paths** (71% agree City of Leduc should take action),
- **increased public transportation** (67% agree City of Leduc should take actions),
- **biking or walking more** (71% agree residents and businesses should take action),
- **carpooling** (63% agree the community should take action), and
- **using renewable energy** (54% agree residents and businesses should take action).

Planning Process

Leduc's GHG reduction planning process followed these steps:

1. Generated a **GHG inventory** quantifying emissions from the City (corporate emissions) and the wider community (community emissions) for 2015.
2. Projected a **business-as-usual forecast** of energy and GHG emissions to 2030 assuming no additional GHG reduction action.
3. Studied the **Leduc context** to understand challenges, existing actions and GHG reduction opportunities, and researched work in other regions.
4. Built **vision and guiding principles** to guide the development of the Plan, gathered from a workshop with LEAB members and staff.
5. Created a long list of **potential GHG reduction actions** based on the results of our spring engagement (online survey, engagement hub, and stakeholder Climate Management Express workshop with additional ideas gathered at the staff and stakeholder workshops).
6. **Screened potential actions** through City of Leduc staff and stakeholder meetings.
7. Generated three **GHG reduction scenarios and targets (low, medium and high)** based on actions selected for each scenario.
8. **Evaluated actions** for GHG reduction potential and cost-effectiveness. Any actions that were not deemed cost-effective (benefits did not outweigh the cost) were removed from consideration.
9. Drafted details around the **high, medium and low scenarios, explaining costs and benefits and the associated GHG targets that could be achieved.** These were presented at the open house, posted on-line and sent by direct email to stakeholders.
10. Assessed final feedback from the open house, stakeholders, and final reviews by LEAB, staff and council. Drafted the GHG Plan.
11. **Presented the recommended scenario** to Committee of the Whole and final report to Council April 2019.



Actions

The following actions are included in the City of Leduc's GHG Reduction Action Plan. If all the actions are completed, the city would achieve the GHG reduction target of 9% below business as usual by 2030. However, only the "low" actions are recommended at the time of writing to achieve a 3% target.

The costs are estimated and include both capital and operating. For a detailed breakdown of costs *see Appendix A.*

Note that ***Council has not approved all of these costs; all individual actions must go through the regular budget process on an annual basis.***

Actions were only included if benefits outweighed the cost. The benefit-cost ratios (BCR) indicates the relative costs and benefits of an action. These values were established during the modelling process. A BCR of higher than one indicates there is a positive value or benefit of an action over time. For example the BCR for the LED streetlight action of 3.7 means that there are 3.7 times more benefits than costs in the modelling process.

The cost per tonne of carbon dioxide equivalent reduced ($/t$CO_2$e) is calculated to demonstrate the average cost over time to reduce one tonne of CO_2e from a project. A negative cost per tonne indicates there are ***more*** benefits than costs of reducing that one tonne of CO_2e. For example, if installing an LED lightbulb pays back its initial investments before the end of its useful life and brings in additional financial savings – its financial benefits exceed its costs and its cost per tonne is negative $39/tonne.

Exhibit 1B

Actions by Scenario, GHG Impacts, Estimated Costs

Low Scenario Actions – 3% Target

Action	Start	Capital	Operating	GHG Reductions (tCO_2e)
LED Streetlights	2017	No additional costs		21,900
Solar on LRC, Operations Buildings	2017	No additional costs		26,600
Energy Retrofits to City Buildings	2019	Approved in 2019 budget		25,500
Infill/High Density Development Policy	2020	Within existing resources		36,200
Mixed Use Development Policy	2020	Within existing resources		11,500
Biocover for Landfill	2019	LDRWMA		216,300
Garbage Baling	2019	LDRWMA (potential increase in environmental fee)		91,700
Tree Planting	Ongoing	In operational budget		1,595

Medium Scenario Actions – 5% Target

Action	Start	Capital or One-Time	Operating	GHG Reductions (tCO_2e)
Create Energy Efficiency Champions	2023	-	$5K ongoing	2,800
Promote Efficiency and Renewable programs, GHG Education Hub	2020	$30K over 2 years, $5K thereafter, and 0.5 FTE in 2020 ($44K operating and $6.5K one-time)		13,700
Buy Best in Class New Fleet	2020	Within existing resources		400
Promote Active Transport, Enhanced Transit & U-Pass Marketing	2020	$50K one time		22,080
Electric Vehicle (EV) Charging Stations & Policy	2026	$110K one time and $2-4K thereafter		250
Enhance Commuter Transit	2026	$600K	$200K	6,600
Promote Secondary Suites	2023	-	$10K over 3 years	3,800
Lower Tippage Fees for Organics	2020	LDRWMA (potential increase in environmental fee)		500

High Scenario Actions – 9% Target

Action	Start	Capital	Operating	GHG Reductions (tCO_2e)
Green Building Standards for City Buildings	2026	$50K - $60K for 5 years, $5K ongoing		9,600
New Solar for City Buildings	2023	$728K over 3 years	-	690
Electric Commuter Bus	2026	$269K one time		350
PACE (Residential & Commercial Buildings)	2020	0.25 - 0.5 FTE - $22K to $44K operating plus $6.5K one-time start up		474,950
Waste Reduction Education for Business & Apartments.	2020	$30K for 2 years, 0.5 FTE in 2020 business case plus $44K in operating plus up to $6.5K in one-time start up costs depending on other staffing		1,015
Organics Diversion Policies & Programs for Business & Apartments	2026	TBD following Waste Reduction Education action		8,975
Variable size cart program	2026	$300K	$20K ongoing	5,205
Organics Processing Facility	2026	LDRWMA (potential increase in environmental fee)		51,725

ntal	No additional costs	21,910	3.7	-39	Low

Exhibit 1C

Summary of Key Actions by Sector, GHG Impacts, Cost Effectiveness Results and Implementation Plan with Budget Impacts

Sector	Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
Energy Supply	**1. Solar on LRC, Operations Buildings**	2017	Facility and Property Services	No additional costs	26,630	1.3	28	Low
	2. New Solar for City Buildings	2023	Facility and Property Services	$728,000 over 3 yrs	7,450	1.4	18	High
Buildings	**1. LED Streetlights**	2017	Environmental Services	No additional costs	21,910	3.7	-39	Low
	2. Energy Retrofits to City Buildings	2020	Facility and Property Services	2019 Projects budget	25,450	2.3	9	Low
	3. Promote Efficiency and Renewable Programs, GHG Education Hub	2020	Environmental Services	$105,000 over 10 yrs plus 0.5 FTE - $44K plus $6.5K in one-time start up in the 2020 business case	13,700	1.4	5	Medium
	4. PACE*	2020	Environmental Services	0.25 - 0.5 FTE $22,000 - $44,000 ongoing from 2021 plus $6,500 in one-time start up costs	474,950	1.0	35	High
	5. Create Energy Efficiency Champions	2023	Facility and Property Services	$40,000 over 8 yrs	2,810	4.8	-36	Medium
	6. Green Building Standard for City	2026	Facility and Property Services	$297,000 over 5 yrs**	9,600	3.2	-28	High
Transport	**1. City to Buy Best-in-Class New Fleet**	2020	Facility and Property Services	Within existing resources	400	0	-374	Medium
	2. Promote Active Transportation	2020	Environmental Services	$25,000 over 1 yr	20,730	101.2	-379	Medium
	3. EV Charging Stations in New Developments	2023	Planning & Development	Within existing resources	250	1.9	-211	Medium
	4. Public Electric Vehicle Charging Stations	2026	Facility and Property Services	$122,000 over 5 yrs	690	1.4	-88	Medium
Transit	**1. Enhanced Transit Marketing**	2020	Transportation	$25,000 over 1 yr	1,380	11.1	-612	Medium
	2. Enhanced Commuter Transit	2026	Transportation	$1,600,000 over 5 yrs	6,550	1.4	-130	Medium
	3. Electric Commuter Bus	2026	Transportation	$269,000 over 1 yr	330	1.3	-138	High

Sector	Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
Land Use	1. Infill - High Density Development Policy	2020	Planning & Development	Within existing resources	36,180	0	-235	Low
	2. Mixed-use Development Policy	2020	Planning & Development	Within existing resources	11,480	0		Low
	3. Promote Secondary Suites	2023	Planning & Development	$10,000 over 3 yrs	3,830	5.0	-40	Medium
	4. Tree Planting & Maintenance	2016	Environmental Services	No new budget required	1,595	9.2	-4,572	Low
Waste	1. Biocover for Landfill	2019	LDRWMA	LDRWMA budget	470,100	17.4	3	Low
	2. Garbage Baling	2019	LDRWMA	LDRWMA potential increase to environmental fee	255,010	3.0	18	Low
	3. Waste Reduction Education for Business & Apartments	2020	Environmental Services	$30,000 for two years, plus 0.5 FTE - $44K plus up to $6.5K in one-time start up depending on other staffing	1,015	0	-61	High
	4. Lower Tippage Fees for Organics	2020	LDRWMA	LDRWMA potential increase to environmental fee	3,740	0	-82	Medium
	5. Organics Diversion Policies & Programs for Business & Apartments	2023	Environmental Services	TBD following waste Action 3	11,390	0	-11	High
	6. Organics Processing Facility	2026	LDRWMA	LDRWMA potential increase to environmental fee	1,100	0	-34	High
	7. Variable Size Cart Program	2026	Environmental Services	$300,000 & $20,000 ongoing	4,800	1.6	32	High

* PACE is a program where building owners can finance renewable energy projects (e.g. solar panels) or energy efficiency upgrades (e.g. new windows) through their property tax. The loan remains with the property even through a sale; thus, the term may be extended over 20 years or more. Often, lower interest rates are available. PACE does not affect the borrowing capacity of the property owner. Information on costs for municipalities to administer the program to be determined as the program evolves. In other jurisdictions, administration costs are covered by program participants.

** Depending on Facilities Master Plan, approved budgets and future technological advancements. (e.g. solar costs).

Implementation Costs

Council was presented for approval the 3% reduction target with the corresponding low scenario actions.

In addition, the medium and high scenario actions are incorporated into this plan as a road map for future actions that can be taken as resources become available.

See Appendix A for a full breakdown of the expected operational and one-time costs for each action over the period of 2020 through 2030.

1 Introduction

Leduc has shown environmental commitment through initiatives that keep our natural environment healthy and clean for many years to come.

Leduc's environmental initiatives – from waste diversion to enhancing our natural areas – help Leduc achieve the vision set out in the *Leduc Environmental Plan – Phase 1*, approved by Leduc City Council in 2012. That plan outlined an intent to develop a plan to reduce greenhouse gas (GHG) emissions throughout the community.

The City of Leduc has already implemented initiatives that save money and reduce GHG emissions because they make good business sense. This GHG Reduction Action Plan is the next step in implementing GHG reduction projects that achieve "best bang for buck" and establishing a GHG reduction target that can be achieved in ten years. The plan was developed with input from the community through surveys, workshops and public information events and materials.

Leduc's GHG Reduction Action Plan is a made-in-Leduc solution to a global issue. The plan respects Leduc's unique local priorities, using the lessons learned from established environmental initiatives and others who have tackled similar challenges. The foundation for this plan includes:

- commitments made in the City of Leduc's *Municipal Development Plan* (2017) and the *Environmental Plan* (2012),
- the 10-year *Weather and Climate Readiness Plan* (2014) that highlights adaption measures to prepare for changing local weather impacts,
- a baseline inventory of Leduc's current greenhouse gas emissions, and
- the award of a $113,600 grant from the Federation of Canadian Municipalities, with assistance from the Government of Canada, to develop the GHG emission reduction plan.

Leduc's GHG Reduction Action Plan provides a prioritized road map for municipal, community and local residents' GHG reduction actions over the next decade. The plan assigns departmental responsibilities and timelines to ensure accountability and help the City meet a GHG reduction target. The plan, including the GHG reduction target, has been purposefully designed to be pragmatic and responsible, while demonstrating leadership on climate action to inspire residents and businesses to do their part to reduce global GHG emissions. The actions to reduce GHGs are practical, cost-effective and built with community input.

Even though the expected costs of each action are outlined in this plan, financial approval has not been provided by Council. Council approved this plan as a roadmap for the actions expected over the next ten years. Financial approval must be sought annually through the regular Council budget processes.

2 Background

2.1 Leduc Context

The City of Leduc is one of the fastest growing cities in Alberta, largely due to its long history as a key hub in Alberta's energy sector. With proximity to Alberta's primary highway, the City of Edmonton, the Edmonton International Airport and two business/industrial parks, Leduc produces a unique GHG profile.

Between 2009 and 2018 the City grew, from 16,967 to 32,448; which is a 4.2% growth rate over 2017 and 91.2% growth since 2006. Growth in the City is expected to continue, reaching about 49,120 by 2035. Residential dwellings are similarly projected to grow from 11,730 in 2016 to about 20,465 (19,650-21,955) by 2035.

Concurrently, this growth will increase demand for energy with potentially significant consequences for GHG emissions, unless action is taken to decouple GHG emissions from economic growth of the City. Judiciously selected and timely actions can promote "green growth" with rising prosperity and falling GHG emissions.

2.2 Partners for Climate Protection Program

The City of Leduc joined the Partners for Climate Protection (PCP) Program through a resolution carried unanimously on June 13, 2016. As a first step to meeting their commitment, the City of Leduc has met Milestone 1 by completing this corporate and community GHG inventory and forecast. The related Corporate and Community GHG Inventory adheres to the PCP Protocol (Canadian Supplement to the International Emissions Analysis Protocol, *Federation of Canadian Municipalities & ICLEI*).

The Partners for Climate Protection (PCP) program supports a network of Canadian municipal governments committed to reducing GHGs. PCP membership covers all provinces and territories and accounts for more than 65% of the Canadian population. The program empowers municipalities to take action against climate change through a five-milestone process that guides members in:

Milestone 1: creating a corporate and community GHG inventory,

Milestone 2: setting realistic and achievable GHG reduction targets,

Milestone 3: developing a local action plan to meet the GHG reduction target(s),

Milestone 4: implementing plans using specific, measurable actions to reduce emissions, and

Milestone 5: monitoring their results.

To date, approximately 350 municipalities are part of the PCP network and over 180 local climate change action plans have been prepared under the PCP program.

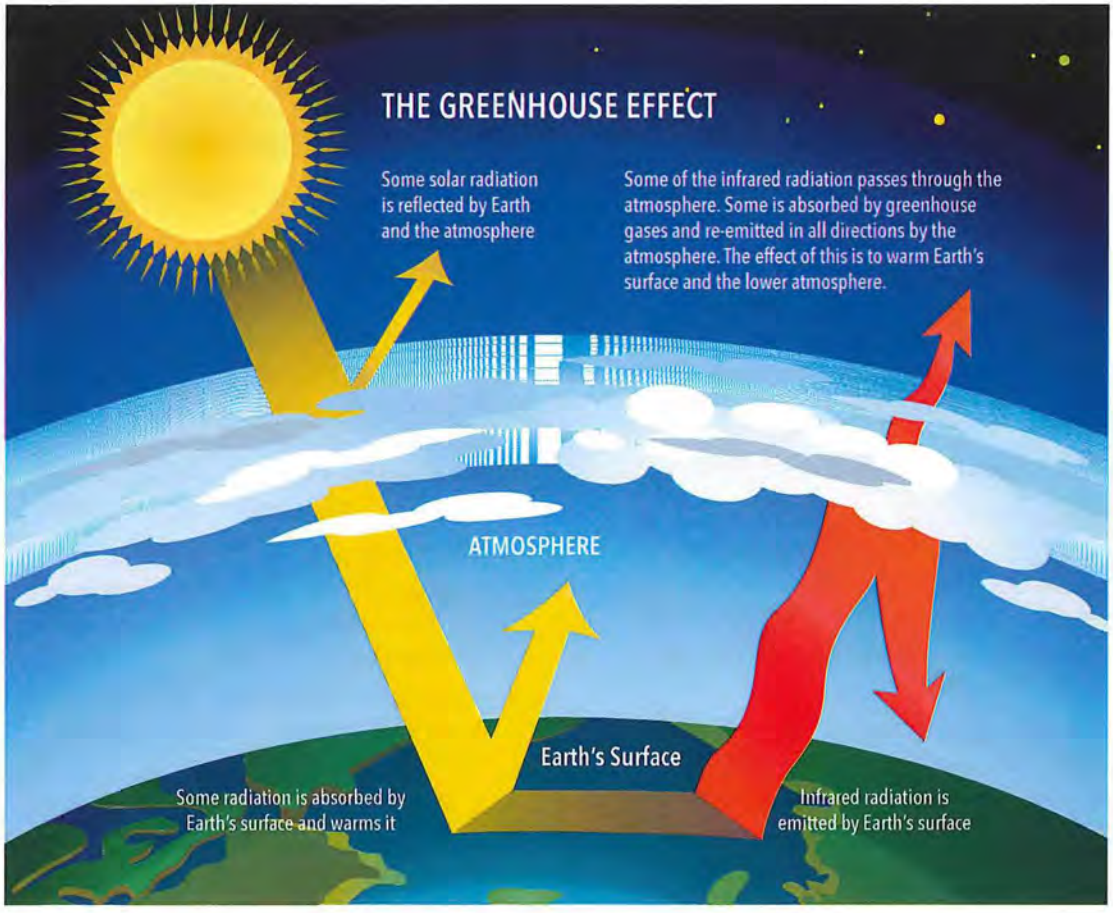
2.3 Understanding Climate Change

Climate change is a long-term shift in weather conditions measured by changes in temperature, precipitation, wind, snow cover and other indicators. It can involve changes in average conditions[1] and in extreme conditions.

Climate change is a result of the expansion of the natural greenhouse effect. Higher GHG concentrations in the atmosphere are amplifying the greenhouse effect and warming the planet, affecting wind patterns, precipitation and storm events. Strong scientific consensus finds that it is extremely likely that humans are causing the climate to change.[2]

Weather is what you experience when you step outside on a particular day. It is the state of the atmosphere at a certain location in the very short-term. *Climate* is the average of the weather patterns in a location over a longer period of time.[3]

Climate change does not mean every day or year will be warmer than the previous one. Changes in weather patterns will continue to produce some unusually cold days and nights, and winters and summers, even as the climate warms. There is growing consensus that the frequency and intensity of extreme weather events (such as very hot days, very cold days, or intense precipitation) is likely to increase this century due to rising temperatures.



The wide range of potential climate change impacts, include: increased risk of flooding and drought, increased strain on water resources, more frequent and intense heatwaves, more frequent wildfires and intense storms. In addition, rising temperatures and changing precipitation patterns may increase the risk of certain illnesses and diseases, introduce new invasive species to the region, and result in changes to wildlife habitat. An increase of 2°C above pre-industrial levels risks exceeding natural tipping points such as thawing of large areas of that are expected to cause significant irreversible negative changes in our climate.[4]

Based on the Intergovernmental Panel on Climate Change's (IPCC) latest Special Report, in order to stabilize global warming at less than 2°C it would require unprecedented efforts to cut fossil-fuel use in half in less than 15 years and eliminate their use almost entirely in 30 years. Addressing this monumental challenge requires all levels of government to act – including municipalities. The IPCC also reported that 1.5°C temperature increase could be reached in as little as 11 years and almost certainly within 20 years without major cuts in greenhouse emissions.[5]

Based on the National Round Table modelling, completed in 2012, the economic impact of climate change on Canada, with no mitigation efforts, could reach $5 billion per year in 2020 and between $21 and $43 billion per year in 2050.[6]

2.3.1 Leduc's Climate is Changing

The impacts of climate change and extremes of weather and climate events have the potential to affect every aspect of life in Leduc, including municipal infrastructure and services, private property, the local economy, the natural environment and the health, safety and well-being of Leduc citizens.

Leduc is being impacted by our changing climate. Leduc's mean annual temperature over the past 30 years has increased 2.7°C. Future projections for the Leduc region predict a further increase in mean annual temperature of 2.0°C by the 2050s. Stream flows in the North Saskatchewan River, Leduc's drinking water source, are expected to continue to decline as Alberta glaciers are projected to lose 80-90% of their volume by the end of the century.[7]

2.3.2 Municipalities Addressing Climate Change

Municipalities have an important role to play in reducing their contribution to global GHG emissions to reduce the effects of future climatic changes. In 2009, Federation of Canadian Municipalities (FCM) estimated that municipal governments have direct or indirect control over approximately 44% of Canada's GHG emissions.[8] With this level of influence, municipal action is important to cost effectively reducing global GHG emissions.

2.3.3 Benefits of Municipal Climate Action

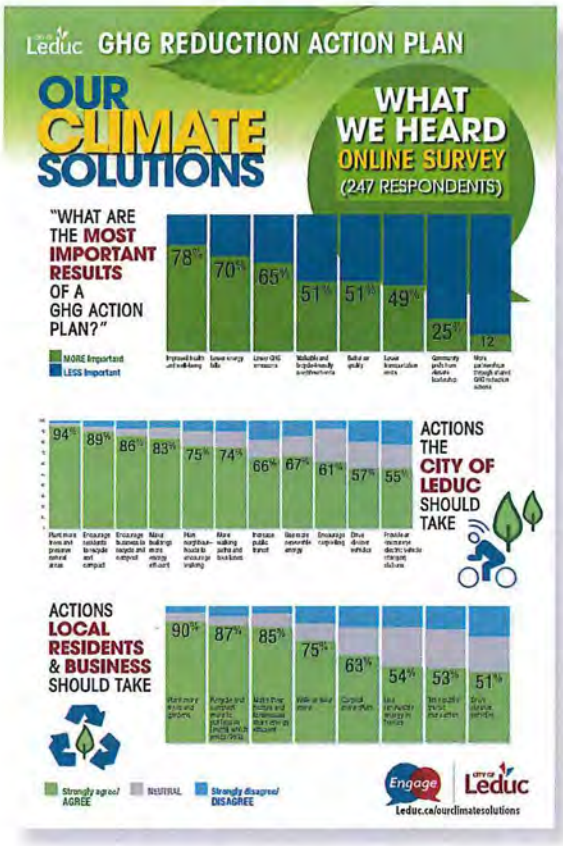
Action to reduce greenhouse gases can be perceived as expensive with negative consequences such as reducing citizens' choices. However, many climate actions can reduce barriers to a better quality of life increasing community livability. Some climate actions can actually save dollars in the long-run through conserved energy, avoided landfilling costs or inexpensive energy generation all without decreasing service levels. Some examples of municipal benefits from climate include:

- improving the quality of life for residents (e.g. increased transit enables greater mobility for seniors and low-income residents, and reduces traffic congestion),
- saving communities money (e.g. more efficient municipal buildings reduce utility operational costs in the long run);
- increasing community resilience to potential future regulations (e.g. shielding municipalities and citizens from increases in the carbon levy); and
- fostering a strong sense of community pride (e.g. the community spirit generated by the City of Leduc's rooftop solar projects).

3 Community Input

Development of Leduc's plan took into account the views of residents, business and community representatives, stakeholder groups, civic staff, City Council and the Leduc Environmental Advisory Board (LEAB).

LEAB assisted the planning team at key points in the planning process and fulfilled the role of community advisor.



The following steps provided a transparent process, captured ideas and tested recommendations prior to City Council approval of the plan.

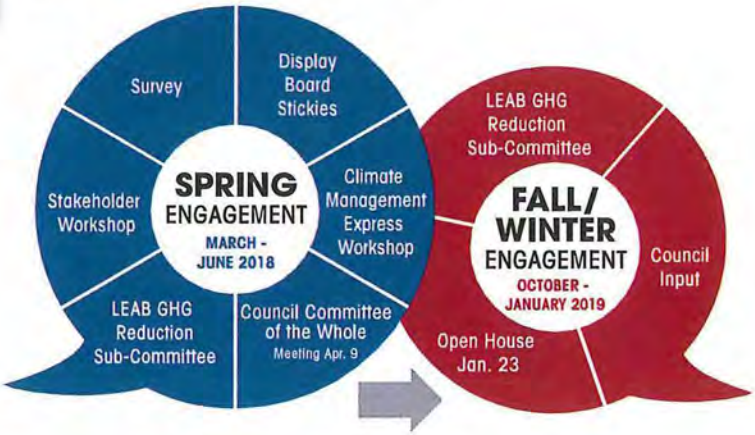
- ENGAGED the Leduc community for plan ideas.
- COMPILED preliminary recommendations.
- PRESENTED preliminary recommendations to the Leduc community for further input.
- DEVELOPED final recommendations and present them to City Council for approval.

The City of Leduc engaged the public and key stakeholders to gather their perspectives and input on their GHG Reduction Action Plan. Engagement activities included:

- communication through a paid print, digital advertising, and a brochure,
- a dedicated section on the Leduc website,
- written feedback through an engagement hub and online survey,
- education and input through a Climate Mitigation Express workshop,
- ongoing input through the Leduc Environmental Advisory Board (LEAB) GHG Reduction Sub-Committee, which served as the official advisory committee for the plan,
- stakeholder engagement workshop, and
- a public open house.

EXHIBIT 2

Engagement Process for the GHG Reduction Plan



3.1 Engagement Overview by the Numbers

Between April 1 and June 5, 2018:

- Our Climate Solutions webpage received 492 views.
- Three Facebook survey promotion posts in April and May collectively reached almost 4,000 people and received 11 likes, 5 shares and 71 post clicks.
- Two Facebook paid advertisements collectively appeared over 95,000 times and received 398 total clicks.
- Leduc's online survey had 247 people respond.
- The Engagement Hub had 94 stickies posted.
- A total of 27 stakeholders from 18 different organizations were invited to attend the stakeholder workshop with 12 stakeholders attending.

In the fall and winter:

- Our Climate Solutions webpage received 223 views with 104 view specific to the Open House.
- Three Facebook open house promotion posts in January collectively reached almost 4,700 people and received 21 likes/shares and 67 post clicks.
- Approximately 50 people attended the open house to present the draft GHG Reduction Action Plan.

Council was also consulted on the GHG Reduction Action Plan and its related engagement and modelling process. In April 2018, Council received a presentation on the plan's modelling and engagement process, as well as the survey, vision and guiding principles. In October 2018, Council reviewed and provided input on the scenarios being modelled and the associated targets and GHG reduction actions.

In early April 2019, Council reviewed final input and the recommended target. Finally, council provided final approval of this City of Leduc GHG Reduction Action Plan on April XX, 2019.

3.2 What We Heard – Survey

Based on the 200+ survey responses received, the top four benefits of a GHG reduction action plan include:

- improved health and well-being (78% rated this result as "more important", that is, 4 or better out of a scale of 8),
- lowering energy bills (70% rated more important),
- lower GHG emissions (65% rated more important), and
- walkable and bicycle-friendly neighbourhoods (51% rated more important).

All proposed City of Leduc GHG reduction actions are supported by the majority of those who responded. The top six City of Leduc GHG reduction actions include:

- planting trees and preserving natural areas (93% of participants agree),
- encouraging of composting and recycling by residents and businesses (over 89-86% of participants agree),
- improving energy efficiency (83% agree),
- neighbourhood planning to encourage walking (75% agree),
- more walking and biking paths (71% agree), and
- increased public transportation (67% agree).

All resident and business GHG reduction actions listed are supported by the majority of those who responded. The top six resident and business GHG reduction actions include:

- planting trees and preserving natural areas (90% agree),
- composting and recycling (87% agree),
- improving energy efficiency (85% agree),
- biking or walking more (71% agree),
- carpooling (63% agree), and
- using renewable energy (54% agree).

3.3 What We Heard – Stakeholder Workshop

Overall the feedback from the stakeholder workshop was positive as they supported the majority of GHG reduction actions proposed. The following additional action items were suggested:

- a waste management program that collects organics from businesses,
- education on the benefits of walk and transit-oriented development,
- enhance transit service so it is accessible for Leduc, Leduc Industrial, Nisku and Edmonton,
- continue to enhance and plan for multi-use trails,
- pursue anti-idling through City leadership, bylaws and signage,
- consider solar carports, and
- consider the introduction of biodigesters.

3.4 Public Open House

Support of the GHG Reduction Plan and a desire to take actions further emanated from input at the public open house. Through the public open house evaluation forms and in conversation with the facilitators, no opposition to the GHG Reduction Action Plan was expressed. The majority of comments requested the City strengthen the actions to further reduce GHG emissions.

Based on the evaluation forms, 83% of attendees supported the 9% GHG reduction target with the remaining responses (17%) supporting the 5% reduction target. These numbers should be treated with caution as only 12 attendees filled out the evaluation forms.

3.5 Simultaneous Engagements

While Leduc was engaging in their GHG reduction planning process, a parallel process called *"Engage Leduc"* was taking place. The City of Leduc was renewing its Community Vision and Four-Year Strategic Plan. As part of the planning process, the City reached out to engage with the community and listen to their needs, wants, hopes and dreams for the future of Leduc. Several GHG reduction related themes were predominant during the Engage Leduc process. In general, Leduc residents expressed support of the following issues:

- transit,
- parks and pathways,
- reducing GHG emissions,
- reducing waste, composting and recycling,
- renewable energy sources,
- reducing urban sprawl, and
- inward growth.

4 GHG Reduction Planning Process

Exhibit 3

City of Leduc GHG Reduction Planning Process

From concept to final plan, the City of Leduc undertook an eleven-step process to gather input, write and finalize our GHG Reduction Action Plan. Part of this planning process involved the consultant team using their Community Inventory and Economic Analysis Tool (CI-EAT) to generate Leduc's GHG inventory and forecast, and to quantify the costs and benefits of potential GHG reduction actions. Leduc's GHG reduction planning process followed these steps.

1. Generated a **GHG inventory** quantifying emissions from the City (corporate emissions) and the wider community (community emissions) for 2015.

   Factors considered: energy prices and use, population, GDP, number and size of buildings, travel modes, number of vehicles, fuel economy, vehicle kilometres travelled, waste sent to landfill and other local landfill factors etc.

2. Projected a **business-as-usual forecast** of energy and GHG emissions to 2030 assuming no additional GHG reduction action.

   Factors considered: predicted trends in population, GHG emissions, the economy, etc.

3. Studied the **Leduc context** to understand challenges, existing actions and GHG reduction opportunities, and researched work in other regions.

4. Built **vision and guiding principles** to guide the development of the plan, gathered from a workshop with LEAB members and staff.

5. Created a long list of **potential GHG reduction actions** based on the results of our spring engagement (online survey, engagement hub and stakeholder Climate Management Express workshop with additional ideas gathered at the staff and stakeholder workshops).

6. **Screened potential actions** through City of Leduc staff and stakeholder meetings.

7. Generated three **GHG reduction scenarios and targets (low, medium and high)** based on actions selected for each scenario.

8. **Evaluated actions** for GHG reduction potential and cost-effectiveness. Any actions that were not deemed cost-effective (benefits did not outweigh the cost) were removed from consideration.

9. Drafted details around the **high, medium and low scenarios, explaining costs and benefits and the associated GHG targets that could be achieved.** These were presented at the open house, posted on-line and sent by direct email to stakeholders.

   Factors considered: energy inputs and outputs of actions, social cost of carbon, energy prices over time, capital and re-occurring costs, cost of landfilling, cost of organics processing etc.

10. Assessed final feedback from the open house, stakeholders, and final review by LEAB, staff and council. **Drafted the GHG Reduction Action Plan.**

11. **Presented** the recommended scenario to Committee of the Whole and final report to Council by May 2019.

5 Vision & Guiding Principles

5.1 Our Climate Solutions: **Vision 2030**

Leduc is a cleaner and healthier community with reduced energy consumption, less waste generation and lower costs as a result of their GHG reduction actions. Residents, council and staff have a common understanding of how they are influencing the climate and are taking local action to address the global issue of climate change.

Leduc is collaborating with nearby municipalities and all levels of government to leverage efforts to reduce GHG emissions.

Sector-specific elements of Our Climate Solutions Vision can be found in section 7 GHG Reduction Actions under each specific sector's title.

5.2 Principles

Development of Leduc's GHG Reduction Plan has been guided by principles that were developed by staff and stakeholders. These principles will also continue to guide plan implementation over the next ten years.

- **LEADING BY EXAMPLE –** The City of Leduc will demonstrate leadership by reducing GHG emissions from their own facilities and operations.
- **COMMUNITY-WIDE EFFORT –** A variety of stakeholders and residents are included in efforts to reduce GHG emissions throughout the community.
- **BEST BANG FOR BUCK –** Actions are cost-effective as they reduce the maximum amount of GHG emissions considering the ease of influence, costs and staff time.
- **BALANCED APPROACH –** Some initiatives will be innovative, based on leading edge thinking and action, while others will be chosen based on their proven track record of results.
- **REALISTIC TIMEFRAME –** A relative balance is struck between short, medium, and long-term opportunities.
- **MADE IN LEDUC –** Actions are reflective of Leduc priorities and culture.

6 Inventory

The City of Leduc's 2015 Greenhouse Gas Inventory calculates GHG emissions including carbon dioxide (CO_2), methane and nitrous oxide coming from the City of Leduc and the Leduc community. The GHGs are summarized into a standard unit – tonnes of carbon dioxide equivalent (tCO_2e). Corporate and community inventories are an important part of developing a municipal GHG Reduction Plan.

A municipal GHG inventory:

- reveals which sectors and/or operations use the most energy and emit the most GHG emissions indicating where to focus GHG reduction efforts,
- helps municipalities track where dollars are spent on energy and carbon potentially revealing cost savings opportunities through energy conservation and efficiency efforts,
- provides a reference point enabling energy and emissions tracking over time. This baseline data will be used to compare future inventories against and to measure progress when monitoring the effectiveness of this GHG Reduction Plan, and
- enables a municipality to access provincial and federal funds by demonstrating commitment to planning for GHG reduction efforts.

6.1 Inventory Results

6.1.1 Community and Corporate GHG Emissions

The City of Leduc emitted approximately 0.42 megatonnes (Mt), or 420,000 tonnes of GHG emissions (tCO_2e) in 2015. Corporate GHG emissions represent 4% of the total, whereas community GHG emissions constitute 96% *(Exhibit 4)*. The majority of GHG emissions are from the commercial and institutional (buildings) sector (34%), followed by: residential (26%), transportation (25%), solid waste (7%), and industrial (7%)[11] *(Exhibit 5)*.

Exhibit 4

2015 Community and Corporate GHG Emissions (tCO_2e) Comparison

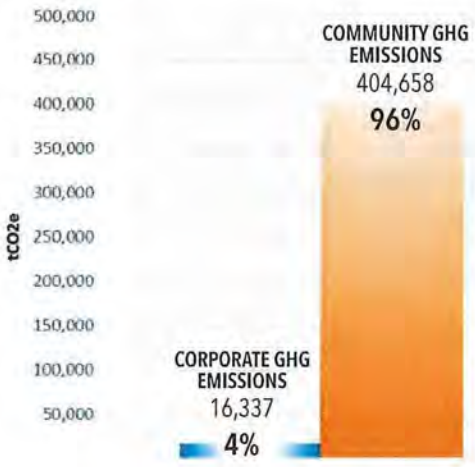


Exhibit 5

Community and Corporate GHG Emissions (tCO_2e), by Source Sector

6.1.2 Corporate GHG Emissions

Total corporate GHG emissions for the City of Leduc's corporate inventory were 16,377 tCO_2e. The majority of GHG emissions, 65%, are generated by buildings *(Exhibit 6)*. Streetlights contribute 14%, fleet contributes 13% and sewage contributes 6% to the total corporate GHG emissions. Finally, waste represents only 2% of Leduc's corporate GHG emissions.

6.1.3 Community GHG Emissions

Total community GHG emissions in the City of Leduc in 2015 were approximately 404,658 tCO_2e. Just over one-third (33%) total GHG emissions are sourced from energy consumption by commercial buildings *(Exhibit 7)*. Energy use by residential dwellings and transportation represent the next largest sources of total GHG emissions, accounting for 27% and 26% of the total, respectively. Solid waste and industrial emissions both contribute 7%.

6.1.4 GHG Emissions Forecast

By 2030, Leduc's total GHG emissions are projected to rise to 460,740 tCO_2e; equivalent to year-on-year average growth of about 0.6% since 2015 *(Exhibit 8)*.

Between 2015 and 2030 the population of the City of Leduc is projected to increase from about 29,300 to 43,330. That is equivalent to an annual average compound growth rate of +2.6%. Hence, total GHG emissions are projected to grow at a slower rate than the population - somewhat decoupling from population growth from GHG emissions. This decoupling is partly the result of reductions in the GHG intensity of the provincial electricity grid.

Our assumption is that corporate and community emissions will increase at the same moderate rate of +0.6%.Based on this assumption, business-as-usual corporate emissions will grow to over 18 $ktCO_2e$ by 2030.

Exhibit 6

2015 Corporate GHG Emissions (tCO_2e), by Source Sector

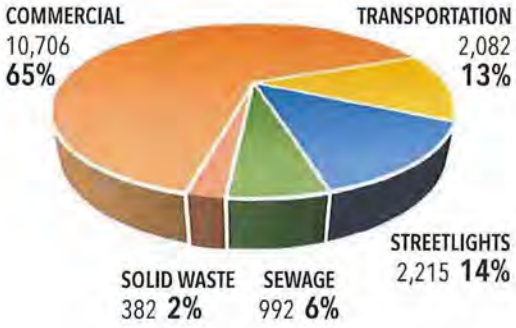
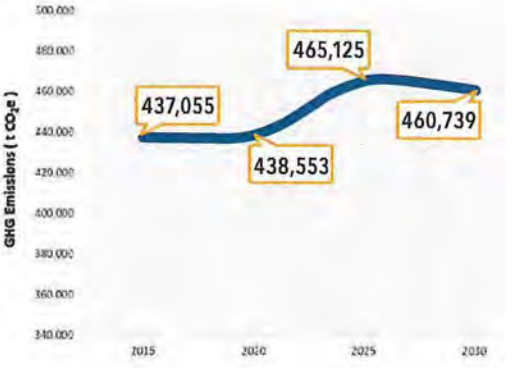


Exhibit 7

2015 Total Community GHG Emissions (tCO_2e), by Source Sector

Exhibit 8

Projected City of Leduc GHG Emissions (tCO_2e), 2015-2030




47 AVE
NO SMOKING

7 GHG Reduction Actions

Our plan focuses on actions within a 10-year timeframe – 2020-2030. However, being an action-oriented municipality, Leduc had already implemented several significant actions that made sense from both an economic and environmental perspective including solar installations, conversion to LED streetlights and organics diversion. To ensure the emissions reductions from those previous actions are accounted for in the GHG inventory, and to recognize these early efforts, significant GHG reduction actions between 2016 and 2019 have also been quantified and included in this plan.

Leduc's GHG emission reduction plan enables the City to meet a GHG reduction target by assigning responsibilities and timelines to GHG reduction actions. The proposed actions are:

- practical,
- cost effective,
- built with community and stakeholder input,
- reduce GHGs, and
- result in benefits such as energy or fuel cost savings, or other community and social benefits.

Cumulative GHG emissions reductions between 2020 and 2030 reach approximately 277,000 tCO_2e for actions modelled in this plan. Under the high scenario, lifetime emission reductions reach approximately 554,000 tCO_2e or about 120,000 cars off the road for a year. Most of the emission reductions are in the waste and buildings sectors (41% and 37% respectively).

A "wedge" diagram outlines emission reduction actions as "wedges" or "slices" that collectively contribute to meeting a specific target.[12] The size and shape of each wedge can indicate the relative contribution overtime from each action or sector.

Transforming the City of Leduc's GHG emission reduction plan into a wedges diagram demonstrates the relative contribution of each sector over time *(Exhibit 10)*. The importance of waste- and building-related actions is apparent. The steep triangle nature of the building-related wedge indicates consistent uptake overtime can grow the resulting GHG impacts from actions.

Two main economic outputs were used to gauge the cost effective of each GHG reduction actions:

- Benefit-cost ratios (BCR) indicates the relative costs and benefits of an action. A BCR of higher than one indicates there is a positive value or benefit of an action over time.
- Cost per tonne of carbon reduced ($/$tCO_2e$) is calculated to demonstrate the average cost over time to reduce one tonne of CO_2e from a project.[13] A negative cost per tonne indicates there are more benefits than costs of reducing that one tonne of CO_2e. For example, if installing an LED lightbulb pays back its initial investments before the end of its useful life and brings in additional financial savings – its financial benefits exceed its costs and its cost per tonne would be negative.

Exhibit 9

Cumulative GHG Emissions Savings by Sector, 2020-2030
Based on high scenario (9% reduction)

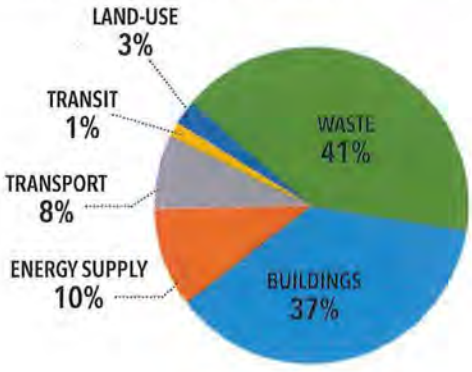
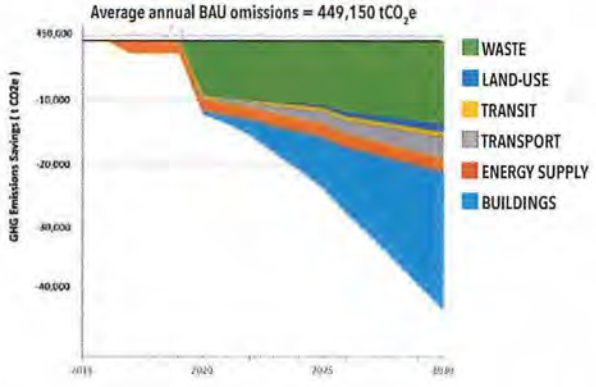
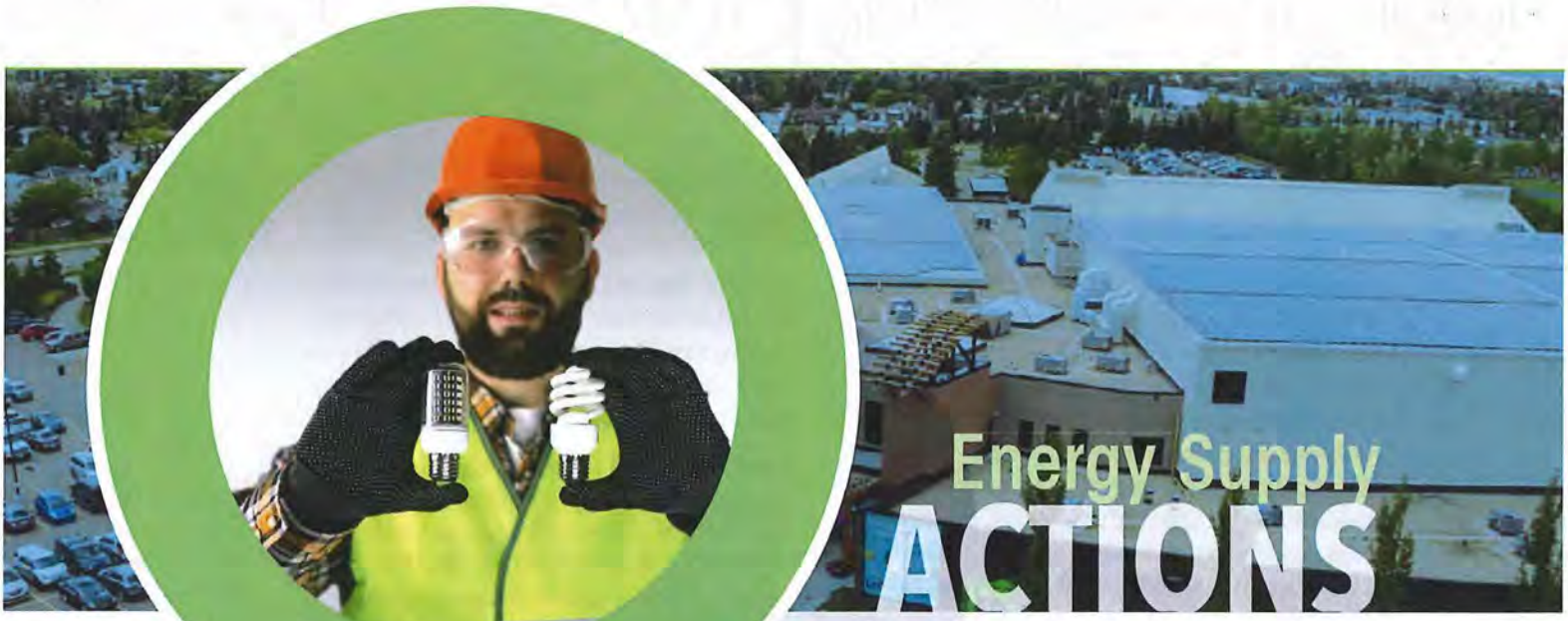


Exhibit 10

GHG Emission Reductions by Sector to 2030
Based on high scenario (9% reduction)





Energy Supply ACTIONS

7.1 Energy Supply Actions

Alberta's grid-based electricity generation has the highest GHG emissions factor of any Canadian province and six times greater than the Canadian average.[14] This factor results in high GHG emissions associated with Alberta's buildings. As a result, electricity generated from building-based renewable sources (otherwise known as distributed generation) in Alberta can have a significant impact on GHG emissions. Distributed generation in targeted locations can also defer or avoid electricity distribution infrastructure investments thereby reducing utility costs for all ratepayers.

Alberta currently has the best photovoltaic (PV) incentives in the country. Leduc has already begun to take advantage of these with the installation of solar arrays on the LRC and Operations Building.

District energy involves transferring heating and cooling between buildings using less energy or cleaner energy than if individual buildings had their own boilers and/or chillers. The technology has environmental benefits when natural gas heat can be delivered more efficiently and/or renewable or waste energy sources can be incorporated more easily than by having them on individual buildings or connected to the grid.

ENERGY SUPPLY VISION

The City of Leduc has reduced its GHG impact and energy costs generating renewable and clean energy production from its operations.

It has inspired the wider community to adopt more renewable and clean energy generation.

ACTIONS

Some building actions also address issues that relate to energy supply. For efficiency, they were only included in the building section of this plan.

LOW SCENARIO

1. **SOLAR ON LRC, OPERATIONS BUILDINGS – Install solar on the Leduc Recreational Centre and the Operations building.** – *Completed* [15]

   Leduc Recreation Centre and City Operations Building currently have 5,622 photovoltaic solar panels on their roofs. Between the two buildings total installed capacity is 1.77 MW. At the time of installation, the LRC solar array was the largest rooftop system in Western Canada.

HIGH SCENARIO

2. **NEW SOLAR FOR CITY BUILDINGS – Install more renewable energy units on city owned and operated buildings and facilities.**

   Leduc is looking to install more photovoltaic (PV) panels on their existing buildings. PV installations on new buildings are included in Building Action 6 – Green Building Standard for City, which recommends all new buildings cover 50% of their electricity requirements by solar panels on the building. The recommendation here is for the City to install additional 500 kW over the next ten years, on an existing or a new building.

Exhibit 11 outlines the GHG impacts, cost effectiveness results, and implementation plan for the main energy supply GHG reduction actions.

Exhibit 11

ENERGY SUPPLY ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
1. Solar on LRC, Operations Buildings	2017	Facility and Property Services	No additional costs	26,630	1.3	28	Low
2. New Solar for City Buildings	2023	Facility and Property Services	$728,000 over 3 yrs	7,450	1.4	18	High

POTENTIAL ACTIONS FOR FUTURE CONSIDERATION

Energy supply-related GHG reduction actions 3-5 have not had their impacts quantified due to a higher level of uncertainty of their direct GHG reduction impacts. Given less certainty around the cost-effectiveness, these will be considered by City of Leduc as other resources become available. Nevertheless, these actions have been deemed as important to remove barriers or support other actions.

3. **Explore modifying permitting process to streamline the process of applying and inspecting solar PV and solar thermal systems.**

   The City of Leduc will explore the potential for a solar combo permit to streamline the process of installing PV and solar thermal systems. Currently, building and electrical permits are covered under the safety code, and the development permits are covered under the land use bylaw. Structural, weight/loading and electrical issues must all be considered with rooftop solar systems to ensure safety and efficacy of the system.

4. **District Energy – Determine whether it is cost effective for the City to pursue district energy.**

   The City of Leduc will continue to explore opportunities to pursue district energy including where to build and what type of system. The waste heat potential at the West Campus Recreation Centre may provide an interesting opportunity for district energy application.

5. **Encourage Solar Ready Residential Buildings – Encourage new buildings to be solar ready.**

   Developers/builders will be encouraged to build solar ready homes. These homes are wired for PV panels but potentially also include the plumbing for solar thermal water heating. Materials and a checklist will be provided to developers/ buildings. This could be combined with Buildings Action 8 – Sustainability Checklist.

7.2 Buildings Actions

A building can last 50 to 100 years (and more) so energy efficient construction and retrofits could influence GHG emissions for a long period of time. [16]

Energy efficiency costs are paid for by energy savings over time. After paying off initial investments, the City, individuals or businesses begin to save money through the energy savings. This is why energy efficiency actions in this report are associated with a negative cost per tonne of CO_2e reduced. In other words, Leduc can save money in the long-run by reducing GHGs through their energy efficiency actions.

Reducing energy consumption in City-owned buildings and other infrastructure allows savings from energy costs to be redeployed to other priorities, including other climate mitigation actions, after the initial capital investments have been paid off.

Buildings are the most significant source of Leduc's GHG emissions; they make up 67% of community and 65% of corporate inventory, and 37% of Leduc's proposed GHG reduction target.

Both provincial and municipal governments have a role in managing emissions from the building sector. Provincial governments can use utility rates and/or environmental charges to pay for energy efficiency programs. They have the clear legislative authority to improve the building code[17], and can reduce the GHG intensity of the grid by incenting more renewable energy. These are key policy levers to reduce GHG emissions from buildings.

Municipalities have direct control over their own buildings and infrastructure. Municipalities also ensure adherence to the building code which also offers a unique point of contact to influence new buildings and renovations prior to their commencement.

BUILDINGS VISION

Leduc's corporate and community buildings are highly efficient, maximize the use of renewable energy, and are designed – to maximize use of solar energy, thereby reducing costs and increasing comfort.

ACTIONS

Actions to reduce GHG emissions in municipal buildings are in direct control of the City and hence are often cost effective and have very predictable GHG reduction results.

LOW SCENARIO

1. **LED STREETLIGHTS – Replace all streetlights with LED bulbs.** – *Completed* [18] [19]

   In 2017, the City of Leduc's energy distribution company, Fortis Alberta, replaced all streetlights in Leduc with LED bulbs. Not only does this reduce GHG emissions, LED streetlights provide a wide consistent light pattern that ultimately results in better, safer lighting. LEDs have a much longer operating life reducing replacement costs of bulbs and the maintenance required to replace them. The light is controlled and focused downward reducing light pollution such as light trespass into homes, impacts on wildlife, and skyglow (which prevents us from seeing stars at night).

LOW SCENARIO

2. **ENERGY RETROFITS TO CITY BUILDINGS – Establish an implementation plan for energy efficient retrofits of existing buildings.**

   The City of Leduc has already engaged a firm to undertake a comprehensive building renewal and energy performance program. The project will start in 2019 with an energy audit of all City facilities and preparation of a 10 year plan to conduct energy efficiency retrofits to lighting, heating, insulation, etc. in various City facilities. Monitoring and verification of savings, and building occupant maintenance training will also be part of the Plan.

   The assumptions in this model were based on 10-20 actions in existing city buildings including lighting and building automation system recommissioning and installation across facilities, a new roof on part of the Leduc Recreation Centre along with new electrical demand rate and service feed retrofit, variable speed pumping for pools and ice plant heat recovery.

MEDIUM SCENARIO

3. **PROMOTE EFFICIENCY AND RENEWABLE PROGRAMS, GHG EDUCATION HUB – Promote existing programs that provide support for energy efficiency improvements to buildings.**

   Energy Efficiency Alberta offers a suite of energy efficiency programs involving financial incentives for installation of energy efficient technologies, energy savings studies/audits and on-site energy managers. Their programs are offered to residential, business, non-profit and industrial sectors. Promoting these programs through the City of Leduc's communication channels could inexpensively increase the uptake in these programs – improving their energy efficiency of buildings in Leduc and reduce related GHG emissions.

HIGH SCENARIO

4. **PASS A BYLAW to allow Clean Energy Improvement Financing / Property Assessed Clean Energy (PACE) in Leduc.**

   PACE is a financing opportunity for energy efficiency and renewable energy upgrades repaid as a charge on the property tax bill. The loan remains with the property even through a sale thus, the term may be extended over twenty years or more and often lower interest rates are available.

   A made-in-Alberta approach to PACE is the Clean Energy Improvement Program administered by Energy Efficiency Alberta (EEA). To launch the program in their jurisdiction, the City of Leduc must adopt an enabling bylaw. The City of Leduc has agreed to submit an Expression of Interest to PACE Alberta confirming the City of Leduc's interest in having a PACE program delivered to its constituents when it becomes available in Alberta.

Property Assessed Clean Energy (PACE)

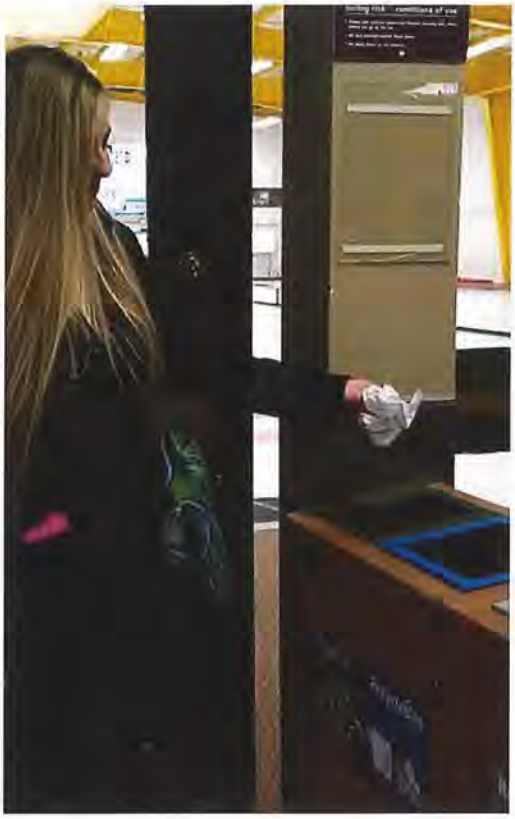
PACE is similar to local improvement taxes that have been used for upgrades such as sidewalks and sewers, but in this case the repayment is based on an upgrade to a single property. Because PACE is typically in the senior lien position (takes priority over more "junior" debt), the loan is seen to be secure and lower interest rates can be offered and the term may be extended over twenty years or more. Longer terms lessens monthly payment costs allowing more projects to be cash flow positive enabling comprehensive retrofits with significant energy savings.

The reason PACE financing was created was to overcome a classic barrier to energy efficiency – uncertainty whether a property owner will own a property long enough to recoup their costs through energy savings.

Financing approvals are simplified as underwriting is centered on the property and well-known cost-effective upgrades, therefore some onerous conditions are avoided such as corporate financials, personal guarantees, equity investments etc.

PACE does not affect the borrowing capacity of the property owner. As property tax payments and obligations are not capitalized, they do not result in additional debt. Because there are no negative effects on the property owner's cash flow or earnings and borrowing capacity can be used for core business investments (as opposed to clean energy investments).

Because PACE is included on the property tax assessments, municipalities have an administrative role to play. Additional costs can be covered through an interest adder on the loan. Municipalities usually have to adopt a bylaw to enable PACE within their jurisdiction.



MEDIUM SCENARIO

5. **CREATE ENERGY EFFICIENCY CHAMPIONS – Develop and implement an education program for City staff to increase energy saving behaviours at work and create staff energy efficiency champions.**

   The City of Leduc will implement an energy conservation behaviour program to reduce GHG emissions from City operations. The GHG reductions modelled in this plan are based on a study of five commercial sector staff behavioural energy conservation program, which showed energy savings of at least 4% from programs, depending on specific characteristics. The programs combined visible support from upper management with multiple communication modes sending an array of messages to staff. Peer champions used engagement techniques including feedback, peer influence, competition, and rewards.[20]

HIGH SCENARIO

6. **GREEN BUILDING STANDARD FOR NEW CITY BUILDINGS – Require all new city buildings to meet an energy efficiency or green building standard.**

   By 2026, the City of Leduc will establish an energy saving standard that all new City owned municipal buildings will meet. Energy standards for City buildings demonstrates to the public commitment to cost effectiveness and the environment. A formal standard ensures this commitment will continue into the future even if staff turnover occurs.

   The standard will be written directly into request for proposals (RFP) when the City design and constructs new buildings. The standard will define an appropriate payback period for the proposed energy efficiency and/or renewable energy measures (e.g. 15 years) and a specific energy savings goal (e.g. 20% improvement in energy savings).

   In this report, the modelling assumptions were that as of 2026, all new buildings would:

   - achieve a 20% improvement in energy efficiency over business-as-usual design; and
   - 50% of all electricity requirements would be covered by solar panels on the building.

   Programs that reduce GHG emissions from other commercial and residential buildings can have a high impact, given the number of buildings they have the potential to influence.

Exhibit 12 outlines the GHG impacts, cost effectiveness results, and implementation plan for the main building-related GHG reduction actions.

Exhibit 12

BUILDING ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenarios
1. LED Streetlights	2017	Environmental Services	No additional costs	21,910	3.7	-39	Low
2. Energy Retrofits to City Buildings	2020	Facility and Property Services	2019 Projects budget	25,450	2.3	9	Low
3. Promote Efficiency and Renewable Programs, GHG Education Hub	2020	Environmental Services	$30,000 over two years and $5,000 thereafter, plus 0.5 FTE - $44K plus $6.5K in one-time start up in the 2020 business case	13,700	1.4	5	Medium
4. PACE	2020	Environmental Services	0.25 - 0.5 FTE $22,000 - $44,000 ongoing from 2021 plus $6,500 in-one time start up costs	474,950	1.0	35	High
5. Create Energy Efficiency Champions	2023	Facility and Property Services	$40,000 over 8 yrs	2,810	4.8	-36	Medium
6. Green Building Standard for New City Buildings	2026	Facility and Property Services	$297,000 over 5 yrs[21]	9,600	3.2	-28	High

POTENTIAL ACTIONS FOR FUTURE CONSIDERATION

Building-related GHG reduction actions 7-10 have not had their impacts quantified due to a higher level of uncertainty of their direct GHG reduction impacts, however they still have been deemed important to remove barriers or support other actions. Given less certainty around the cost-effectiveness, these will be considered by City of Leduc as other resources become available.

7. **BYLAW, POLICY AND PROCESS REVIEW – Review and amend Bylaws, policies, and processes to remove barriers and promote renewable energy, maximize use of solar energy and more energy efficient buildings.**

Leduc will undertake a review to ensure their bylaws do not inadvertently impose barriers, restrictions or penalties on homes and buildings that introduce "beyond code" energy efficient features and/or renewable energy units.

A more energy efficient home can face the following issues:

- building projections to provide passive solar shading can require greater setbacks from property lines,
- highly energy efficient walls can be significantly thicker, again, which can require greater setbacks from property lines, and/or can reduce usable space in the home, and
- roof-top renewable energy units can require homes to be reduced in height depending on bylaw requirements.

Therefore, some examples of bylaw amendments could include:

- relax maximum height requirements,[22]
- calculate "build-to-lines" from the *outer wall*,[23]
- measure floor area from the *inner wall*,[24]
- amend height and floor area ratios,[25]
- allow building projections for passive solar shading to project into the required yard, and
- a consideration of solar rights to enable light penetration and photovoltaic panel efficacy.

Non-financial incentives could be considered, such as:

- density bonuses for redevelopment for advanced energy efficiency and renewable energy features,
- prioritize permit applications for buildings that meet certain standards, and
- make energy efficiency/renewable energy information readily and easily available.

8. **SUSTAINABILITY CHECKLIST – Introduce a (voluntary) sustainability checklist for new developments.**

As part of permit applications for subdivisions, developments and building permits, a sustainability checklist would be provided to developers. The goal is to increase awareness of GHG reduction actions and other sustainability related features that are possible when building. The list could act as a tool to engage in dialogue with applicants on sustainable building practices.

Filling out the checklist would be voluntary but it could also be linked to provision of non-financial incentives to encourage these practices.

9. **INCREASE STAFF CAPACITY TO PROMOTE GREEN BUILDING – Increase capacity of city staff to promote green building development.**

Increasing staff understanding of energy efficient/ renewable building features through training and education can increase understanding in the building and development community. The permit and building inspection process for retrofits and new buildings provide an excellent opportunity for City of Leduc staff to interface with the community on these issues.

10. **SOLAR -READY CITY BUILDINGS – All new City of Leduc buildings will be "solar ready".**

By 2026, all new City of Leduc buildings will be PV solar ready. PV solar ready buildings have the wiring and structure to ensure ease of installation of PV panels post-construction.

Transportation ACTIONS

7.3 Transportation Actions

Transportation GHG emissions contribute 26% of Leduc's community GHG emissions and 13% of the corporate GHG inventory. Transportation and transit actions constitute 8% of the GHG reductions under the high scenario.

In 2016, commuting to work in a private vehicle constituted 91% of travel with only 6% of those travelling as passengers; in other words, 94% of Leduc commuters travel in single occupancy vehicles (SOVs). Only 3 percent of Leduc commuters walked or biked to work. (Statistics Canada, 2017).

Transportation GHG emissions can be reduced by:

- avoiding vehicle trips by walking, biking, telecommuting, etc.,
- reducing GHG emissions by taking public transit, ridesharing, carsharing, buying a more efficient vehicle, and
- switching to less GHG-intensive fuels such as electric vehicles (EVs).

To change transportation habits, a range of polices/ programs should be introduced:

- **PROVIDE ALTERNATIVES** – people need to be provided with a safe, viable alternative to single occupancy vehicle travel.
- **EDUCATE AND INCENT ALTERNATIVES** – citizens need to be aware of and motivated to choose alternative transportation modes. Financial and non-financial incentives make it faster, less expensive, and/or easier to choose alternatives.
- **DISCOURAGE SOVS** – higher costs and longer travel times can discourage SOV use.

Traffic and roadway management strategies such as high-occupancy vehicles (HOV)/bus lanes can provide strong incentive to carpool or use transit during congestion periods. They can also increase commuting time by reducing the amount of roadway available to SOVs. Parking fees or limiting parking availability result in a higher financial and time costs providing further motivation to seek SOV alternatives.

Sidewalks and good walking/biking trails/bike lanes will increase active transportation by making it safer, easier and more pleasant. Viable active transportation routes have been shown to increase active transportation and improve resident quality of life. Municipalities can enhance active transportation by:

- expanding and enhancing trails and sidewalks,
- increasing snow clearing of trails and sidewalks,
- identifying and enhancing bike routes by making high traffic areas safer for bikers (e.g. designated bike lanes),
- connecting public transit into active transportation routes,
- establishing and/or enhancing biking supportive infrastructure such as bike racks, and
- providing education/marketing materials such as walking and biking maps and campaigns to shift transportation habits.

E-bikes (bikes with electric assist) have been shown to generate more trips, longer trips and different types of bicycle trips. The ability to ride further and faster with less effort, carry more cargo or children, overcome hills, and feel safer can address multiple barriers to biking (MacArthur, 2018).

Municipalities have a role to play in encouraging the purchase of electric vehicles by helping ensure charging infrastructure must be in place in multi-family dwellings and at city parking facilities.

Transit is outlined in its own section starting on page 24.

TRANSPORTATION VISION

Residents feel safe and motivated to use Leduc's expansive and convenient biking and walking routes for day to day transportation. Citizens avoid idling and are driving more fuel efficient and electric vehicles, as there is sufficient charging infrastructure throughout the City. The fuel used and GHG emissions per kilometre travelled is reduced due to a more efficient and electrified fleet.

ACTIONS

MEDIUM SCENARIO

1. **CITY TO BUY BEST-IN CLASS NEW FLEET – Add fuel efficiency/GHG intensity to Procurement Manual list.**

   City of Leduc fleet staff are already motivated to conserve fuel and purchase more efficient/less emitting vehicles. To take further action, they will add fuel efficiency/GHG considerations to their Procurement Manual list. This action ensures the City will consider these factors in vehicle purchases and becomes part of relevant Requests for Proposals. A sustainability clause already exists in the Procurement Manual but these additional criteria will ensure GHG emission reductions are considered.

MEDIUM SCENARIO

2. **PROMOTE ACTIVE TRANSPORTATION – Develop and implement an education campaign to promote active transportation.**

   The City of Leduc already promotes Clean Air Day by offering free transit and undertakes the Commuter Challenge. They will build on these promotions and provide an education campaign on low GHG forms of transportation. This action will be connected to Transit Action 1 – Enhanced Marketing for Transit.

   Best practice campaigns have seen a significant reduction in GHG emission. Kelowna's Active Transportation Program (smartTRIPS) used community-based social marketing (CBSM) concepts to encourage active transportation. They saw a decrease of 10 to 20% in vehicle-kilometres travel (VKT) by and increase the use of active transportation modes by 10 to 20%.

   E-bike promotion should be considered as an element to such a campaign given it is a newer technology that may not have been included in past projects.

MEDIUM SCENARIO

3. **EV CHARGING STATIONS IN NEW DEVELOPMENTS – Develop and implement electric vehicle policy for new developments to require electric vehicle charging infrastructure.**

   Bylaws to require EV charging stations in new multi-family dwellings, mixed use buildings and parking building will ensure this vehicle choice is more available to all residents. The policy could be structured to require that developers include a certain ratio of level two charging stations in all new City developments.

MEDIUM SCENARIO

4. **PUBLIC ELECTRIC VEHICLE CHARGING STATIONS – Introduce City-owned charging stations for electric vehicles**

   The City of Leduc will install electric vehicle charging stations at key public services buildings. As electric vehicles gain market share and the GHG intensity of electricity declines overtime, municipal contribution to EV infrastructure is becoming more important. Installation of EV charging stations could be undertaken by any level of government but it makes sense to offer these charging stations at municipal facilities. Provincial or federal government grants may be required to provide sufficient funding to install the charging stations.

Exhibit 13 outlines the GHG impacts, cost effectiveness results, and implementation plan for the main transportation GHG reduction actions.

Exhibit 13

TRANSPORTATION ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
1. City to Buy Best-in Class New Fleet	2020	Facility and Property Services	Within existing resources	400	0	-374	Medium
2. Promote Active Transportation	2020	Environmental Services	$25,000 over 1 yr	20,730	101.2	-379	Medium
3. EV Charging Stations in New Developments	2023	Planning & Development	Within existing resources	250	1.9	-211	Medium
4. Public Electric Vehicle Charging Stations	2026	Facility and Property Services	$122,000 over 5 yrs	690	1.4	-88	Medium

POTENTIAL ACTIONS FOR FUTURE CONSIDERATION

Transportation-related GHG reduction actions 5-7 have not had their impacts quantified due to a higher level of uncertainty of their direct GHG reduction impacts. Given less certainty around the cost-effectiveness, these will be considered by City of Leduc as other resources become available. Nevertheless, these actions have been deemed as important to remove barriers or support other actions.

5. **EARLY FLEET RETIREMENT – Add a criterion to the list of fleet retirement criteria to consider retiring high fuel use vehicles before fuel efficient vehicles when appropriate considering their function.**

   When prioritizing which vehicles should be retired, GHG emissions will become a key factor under consideration. Retiring a higher emitting vehicle early enables the use of a less emitting vehicle resulting in GHG reductions.

6. **LOW EMISSION VEHICLE MAINTENANCE – Establish vehicle maintenance policies and operating (driving) guidelines that reduce energy consumption.**

   The City of Leduc will ensure their vehicle maintenance policies and operating guidelines will reduce energy consumption whenever feasible.

7. **UPDATE WALK AND BIKE-ABILITY REVIEW – Update the review of Leduc's walk and bike-ability considering barriers, best practices, and infrastructure enhancements.**

   Leduc already uses multiways as key connectors for pedestrians and cyclists. They are founded on the principles of access, safety and continuity. The City has over 48 km of primary multiways, separated from traffic and cleared of snow in the winter, with complimentary secondary and tertiary routes.

   Building on past initiatives such as the Multiway Map and the Walkable Alberta Leduc Community Report, the City of Leduc will review current walking and biking corridors for gaps and barriers. It will identify future infrastructure enhancements (e.g. bike lanes on roadways) and make a plan for their upgrade.

   Best practices should be used as a guide to address Leduc specific issues. Every Leduc Area Structure Plan (ASP) for new developments outlines an arterial and collector pathway along it. It is older areas in the City that may require retrofitting. This action will identify and fill in gaps.

   Communication of safety and conductivity improvements could take place through the active transportation education campaign *(see Transportation Action 2 – Promote Active Transportation).*

7.4 Transit Actions

Public transit brings multiple benefits to a community including:

- reduced air and GHG emissions,
- enhanced citizen mobility options, especially for adolescents and senior citizens,
- decreased congestion,
- increased road safety,
- consumer savings,
- increased potential for physical activity, and
- enhanced economic activity.

Thus, there are many reasons to pursue public transit beyond GHG reductions.

To reduce GHG emissions, transit planners must design routes that maintain moderate to high ridership. Passenger numbers must be high enough to take multiple vehicles off the road, considering a traditional bus generates more GHG emissions than one passenger vehicle. Electric buses can alleviate GHG concerns from low ridership transit but low fare revenue would be limit the cost effectiveness.

TRANSIT VISION

Citizens are moving out of their cars and into Leduc's fast, convenient and low GHG transit thereby saving them money and increasing their mobility. The City has bus stops within 400 meters of the majority of residences. The fuel used and GHG emissions per kilometre travelled are reduced due to a more efficient and/or electrified fleet.

ACTIONS

This plan considered expanded transit from a GHG reduction perspective only. Expanded transit beyond these actions may be desirable for other reasons including mobility, equity, economic development and traffic congestion alleviation.

While many transit actions were modelled, it is the actions included in this plan that were deemed cost effective and achieve GHG emission reductions. If fares were adjusted or ridership proves higher than historic trends, further enhanced transit on existing routes and/or new routes could be justified from a cost effectiveness perspective.

MEDIUM SCENARIO

1. **ENHANCED TRANSIT MARKETING – More resources will be directed towards marketing Leduc's existing transit.**

   Connected to transport action – Active Transportation Education Campaign, the City of Leduc will increase Leduc Transit marketing to increase boardings. Part of these efforts should include marketing the U-Pass to graduating grade 12 students and their parents. Successful marketing strategies will draw upon social marketing (including community-based social marketing techniques)[26] as well as other social science insights to encourage alternative modes of transportation.

MEDIUM SCENARIO

2. **ENHANCED COMMUTER TRANSIT – Increase the use of public transit by increasing the hours of service for commuter buses.**

   This action would increase the ridership on commuter buses to Edmonton by increasing hours offered and potentially through route modifications. It is anticipated this service would increase boardings by 47% (subsequently at the same rate as population growth).

HIGH SCENARIO

3. **EXPLORE LIFECYCLE COSTS, barriers and advantages of purchasing electric buses for Leduc public transit.**

   Communities are increasingly electrifying their bus fleets to reduce GHG emissions, as battery technology costs decrease and electric buses have been proving their viability even in cold weather. The City of Edmonton is in the process of electrifying their fleet and St. Albert has had electric buses since May 2017.

   This action involves upgrading commuter buses. The modelling results outlined in ***Exhibit 14*** are the lifecycle GHG impacts of one electric 60-foot commuter bus.[27] If the whole fleet of commuter buses were electrified, GHG emission reductions would be four times greater (1,300 tCO_2e) and six times greater (2,000 tCO_2e) if electric buses were also purchased for Transit Action – Enhanced Commuter Transit.

Exhibit 14 outlines the GHG impacts, cost effectiveness results and implementation plan for the main transit-related GHG reduction actions.

Exhibit 14

TRANSIT ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
1. Enhanced Transit Marketing	2020	Transportation	$25,000 over 1 yr	1,380	11.1	-612	Medium
2. Enhanced Commuter Transit	2026	Transportation	$1,600,000 over 5 yrs	6,550	1.4	-130	Medium
3. Electric Commuter Bus	2026	Transportation	$269,000 over 1 yr	330	1.3	-138	High

POTENTIAL ACTIONS FOR FUTURE CONSIDERATION

Transit-related GHG reduction actions 4 and 5 have not had their impacts quantified due to a higher level of uncertainty of their direct GHG reduction impacts. Given less certainty around the cost-effectiveness, these will be considered by City of Leduc as other resources become available. Nevertheless, these actions have been deemed as important to remove barriers or support other actions.

4. **INTRODUCE MORE PARK'N RIDES – Explore introducing more Park'n Ride lots to encourage the use of public transit.**

   Leduc currently has three Park'n Ride lots (Alexandra Arena, Leduc Recreation Centre, and Leduc County Centre). The City will explore whether additional Park'n Ride lots are necessary to encourage a greater use of Leduc public transit.

5. **ENHANCE TRANSIT RELATED BIKE INFRASTRUCTURE – Explore the need and the efficacy of enhancing transit-related bike infrastructure.**

   Bike racks on buses and bike racks and/or lockers near transit hubs could encourage transit users by enabling "first and last-mile" transportation for public transit. The City of Leduc will explore the safety and the need for adding bike racks to their buses. Needs and gaps in bike rack availability and/or lockers could be identified through *Transportation Action – Walk & Bike-ability Review*.

Land Use ACTIONS

7.5 Land Use Actions

How we plan our communities greatly influences the type of housing developed and how residents move through the city. By extension, land use decisions impact transportation GHG emissions and to a lesser degree building-related GHGs.

Concentrating population by commercial nodes and/or the downtown core means a higher percentage of the population can walk or bike to services and their workplace. Increased walk- and bike-ability has been shown to have better health and higher happiness, increase property values and strengthen community bonds. High density neighbourhoods and services within walking distance of key transit routes allow for increased transit frequency and greater financial viability.

Buildings in areas with higher population density tend to have smaller GHG footprints per person given living spaces tend to be smaller. Secondary suites achieve densified, more compact housing by reducing the living space for one family by making one housing unit into two. These also reduce GHG emissions by reducing the amount of heating space per dwelling.

One unique barrier to further densifying Leduc's downtown core is that it lies within the Airport Vicinity Protection Areas (AVPA). There is a limit on dwelling units within the AVPA restricting Leduc's development of its downtown core. This is being reviewed by the Planning department in the context of infill and secondary suites, and all recommendations below are subject to AVPA compliance.

Land use related GHG reduction actions constitute 2% of the GHG reduction target out to 2030 under the high scenario. This number increases in the longer term considering the total emission reductions over the full lifetime of these land use policies and programs.

Because of the long term nature of land use decisions, it is important to consider GHG implications at the outset.

LAND USE VISION

Residents and businesses are choosing to live and work in Leduc because of its walkable design and integrated green spaces. Leduc's compact nature and conveniently located services, across many neighbourhoods, encourage citizens to bike or walk for many local trips. The densified housing, high number of secondary suites and mixed-use areas contribute to a low per capita building energy consumption.

ACTIONS

LOW SCENARIO

1. **INFILL – HIGH DENSITY DEVELOPMENT POLICY – Encourage infill and high-density housing in the downtown core, commercial zones and along transit routes.**

   The City of Leduc will identify areas where further infill is possible and implement measures to encourage infill. Areas in and close to the downtown core, commercial development and along existing transit routes will most likely be prioritized. Efforts to encourage infill in existing residential areas may include:

   - Educate developers on options for infilling.
   - Prioritize infill permit applications.
   - Continue to implement the streetscape capital improvements outlined in the downtown masterplan.
   - Meet or exceed Edmonton Metropolitan Region Plan minimum greenfield density targets and aspirational intensification targets.

   In new residential areas, there will be efforts to encourage high density housing which may include:

   - Educate and promote the benefits of high-density housing to residents and developers; for example, developing guidelines for builders on high-density housing.
   - Review the permitting action plan to incentivize multi-family applications. If possible, timelines for permit processing for high density housing may be expedited or at minimum identify clear timelines to improve predictability for developers.
   - Meet or exceed Edmonton Metropolitan Region Plan minimum greenfield density targets and aspirational intensification targets.
   - In the ASP guidelines, encourage developers to plan for active transportation, local access to retail and increased access to transit.

LOW SCENARIO

2. **MIXED-USE DEVELOPMENT POLICY – Encourage mixed use development in downtown and other appropriate areas.**

   Steps to encourage mixed-use zones in Leduc include:

   - Continue to implement the streetscape capital improvements outlined in the downtown masterplan. In 2020 when reviewing the land-use bylaw, review the land use districts to allow for more mixed use – subject to compliance with AVPA.
   - In the Municipal Development Plan (MDP) consultation process, confirm the concept regarding mixed-use walking distance as outlined in the neighbourhood design guidelines.
   - Develop a target for percent of residents within 10 minutes-walk of services.

MEDIUM SCENARIO

3. **PROMOTE SECONDARY SUITES – Encourage secondary suites including garage, or garden dwellings.**

   Higher density residential areas may also be achieved by encouraging homeowner/developers to build/renovate secondary suites. The following steps to encourage suites may include:

   - Educate home owners on the benefits of secondary suites. Benefits outlined may include: additional income, no property tax/ service fee implications and reduced per capita energy consumption.
   - Educate homeowners on the steps required to incorporate a secondary suite into their homes such as building code requirements, hiring a contractor and drafting tenancy agreements etc.
   - Streamline the process for approving new suites. One such step would be consulting council during the MDP process on whether secondary suites become a permitted use and address the question of whether townhouse end units can have secondary suites.
   - Encourage secondary suites in new builds as a more cost-effective way to incorporate a suite into a home and/or encourage homes to be suite-ready (e.g. run electrical and plumbing requirements and take fire separation steps).
   - Consider reduced permit costs.

LOW SCENARIO

4. **TREE PLANTING AND MAINTENANCE – Increase the budgets for tree replacements and planting.**

   The Leduc Environmental Advisory Board hosts annual community tree planting and pollinator garden events, where at least 600 trees are planted each year. This number has been increasing year over year with the availability of grants and partnerships. In addition, City of Leduc approved new budgets in 2019 for tree replacement and additional tree planting.

Exhibit 15 outlines the GHG impacts, cost effectiveness results and implementation plan for the main land use-related GHG reduction actions.

Exhibit 15

LAND USE ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
1. Infill – High Density Development Policy	2020	Planning & Development	Within existing resources	36,180	0	-235	Low
2. Mixed-use Development Policy	2020	Planning & Development	Within existing resources	11,480	0		Low
3. Promote Secondary Suites	2023	Planning & Development	$10,000 over 3 yrs	3,830	5.0	-40	Medium
4. Tree Planting & Maintenance	2016	Environmental Services	No new budget required	1,595	9.2	-4,572	Low

7.6 Waste Actions

GHG emissions (methane) from landfills are generated by the decomposition of organic waste in the absence of oxygen. After organics are deposited in the landfill related methane can be emitted for more than 40 years. This gas has a 34 times greater climate impact as compared to carbon dioxide (CO_2).

Diverting organic waste from the landfill through education, financial motivation, and/or requiring separate organics containers are effective ways to reduce GHG emissions.

Commencing in 2012, Leduc's residential curbside organics diversion program, alongside their recycling program, has achieved diversion rates of 49-54%.

Historic waste in the landfill continues to emit methane for over 40 years, but a biocover can reduce these emissions. Preliminary results show that the process of garbage baling also greatly reduces methane from new solid waste being contributed to the landfill.

Solid waste contributes 7% of Leduc's community GHG emissions, 2% of corporate GHG emissions, and 41% of Leduc's proposed GHG reduction target under the high scenario.

WASTE VISION

Most residents and businesses recycle and compost. The City of Leduc has met and exceeded its diversion target of 65%. The City of Leduc's residents and businesses understand how to divert and reduce their waste and recognize the related GHG and other benefits.

The Leduc and District Regional Waste Management Facility (LDRWMF) has significantly reduced its methane emissions through GHG emission reduction technologies such as a biocover and garbage baling.

Businesses and multi-family residents have substantially reduced their waste by diverting organics and recycling from the landfill.

ACTIONS

LOW SCENARIO

1. **BIOCOVER FOR LANDFILL – Install a biocover at LDRWMF.**

   Leduc and District Regional Waste Management Authority (LRDWMA) is installing a biocover to cap historic waste and reduce GHG emissions.

   A biocovers is a organic cover made of compost and soils and supports vegetation growth, as opposed to a traditional clay cover. The organic material oxidizes (or destroys) the methane passing through the cover. Biocovers are particularly appropriate for landfills, like LDRWMF, where landfill gas collection systems are not economically feasible.

LOW SCENARIO

2. **GARBAGE BALING – Process waste using garbage baling technology.**

   LRDWMA is planning to compact new waste into garbage bales to avoid attracting birds, due to the proximity to the airport. Garbage baling compresses municipal solid waste (MSW) into air-tight bales and wraps them in plastic. This process halts biological activity and consequently the production of methane emissions. There is some decomposition that occurs initially in the bale and subsequently when the plastic deteriorates, however this process is aerobic and therefore does not produce methane.

   One study shows that methane was not detected 8 months and 20 months after the bale was produced.[28] Given the limited data available on the methane implications of this process and no knowledge of energy inputs into the process, the model assumes a discounted potential GHG reduction impact by 50% to reflect this uncertainty. Further information should be gathered on the energy inputs of this process and the lifecycle impacts of increased plastic use.

HIGH SCENARIO

3. **WASTE REDUCTION EDUCATION FOR BUSINESS AND APARTMENTS – Outreach support for commercial and multifamily organics diversion.**

   Currently, there is no curbside organics pick-up for commercial and multi-family buildings, as they pay for and organize their own waste collection and removal. In addition, it is roughly estimated that up to half of waste from businesses, institutions, industry and multifamily buildings is hauled somewhere other than the LDRWMF, therefore an education campaign in Leduc could have a greater impact beyond the waste identified at LDRWMF. Education will be the first step to encouraging businesses to divert their organic waste, followed by outreach support to improve sorting and assess hauling costs.

MEDIUM SCENARIO

4. **LOWER TIPPAGE FEES FOR ORGANICS – Implement differential tippage rates for organics and other materials to incent diversion.**

   Increasing the differential between organics and solid waste tippage fees will provide further incentive for businesses to sort more organics. Currently, the commercial wet waste rate is $72/tonne and organics is $64.50/tonne or a difference of $7.50. Increasing the difference between the two tippage fees could motivate further organics diversion in the commercial sector.[29]

HIGH SCENARIO

5. **ORGANICS DIVERSION POLICIES AND PROGRAMS FOR BUSINESS AND APARTMENTS.**

The City of Leduc will consider policies to divert organics from businesses and apartments. For example a waste diversion plan could be required or a separate organic waste container could be required for commercial and multi-family units.

This is the third policy/program step focused on commercial organic waste. The desired approach is to transition from education to more stringent requirements to help guide the industry to better climate-related decisions. The model uses an approach similar to the steps undertaken by the Regional District of Nanaimo (RDN) when they achieved a 48% commercial diversion rate.[30] They started with education and ended with a more stringent mandate. In addition, RDN implemented a landfill ban on commercial food waste.

HIGH SCENARIO

6. **ORGANICS PROCESSING FACILITY – Introduce an organics processing facility at LDRWMF.**

If the Leduc and District Regional Waste Management Authority agreed to building an organics processing facility in the future, greenhouse gas reductions would occur in two ways:

- **Avoided emissions from waste management trucks** – Greenhouse gas will be avoided by eliminating the need for trucks, loaded with organic waste, to drive from LDRWMF to the current processing facility at Penhold or the previous location near Strathmore. The model used an avoided trucking a distance of 502 kilometres.[31]
- **Avoided methane emissions from diverting additional organic waste** – As more organics are sorted out of the waste stream by residents and businesses, less GHG emissions will be generated by landfilled waste at the LDRWMF. As organics diversion policies become more common and more feasible, GHG emissions are also expected to reduce further when other communities embrace organics diversion.

  Only City of Leduc's impact on LDRWMF emissions are included in the current inventory and model.

HIGH SCENARIO

7. **VARIABLE SIZE CART PROGRAM – Implement a variable size cart program.**

Requiring consumers to pay per size of unit of garbage receptacle sends the message that landfills are not infinite and effectively reduces residential waste disposed. Studies of *"pay as you throw"* programs show increased waste diversion between 8% and 38%.[32]

In 2005, over 200 communities in Canada and over 6,000 in the United States finance their waste disposal through variable fees charged directly to the households.[33]

Exhibit 16 outlines the GHG impacts, cost effectiveness results, and implementation plan for the waste-related GHG reduction actions.

Exhibit 16

SOLID WASTE ACTIONS

Action	Start	Lead Department	Required Resources	Lifetime GHG Reductions (tCO_2e)	Benefit Cost Ratio	Cost per tonne ($/tCO_2e$)	Scenario
1. Biocover for Landfill	2019	LDRWMA	LDRWMA budget	470,100	17.4	3	Low
2. Garbage Baling	2019	LDRWMA	LDRWMA potential increase to environmental fee	255,010	3.0	18	Low
3. Waste Reduction Education for Business & Apartments	2020	Environmental Services	$30K for 2 yrs, plus 0.5 FTE - $44K plus $6.5K in one-time start up	1,015	0	-61	High
4. Lower Tippage Fees for Organics	2020	LDRWMA	LDRWMA potential increase to environmental fee	3,740	0	-82	Medium
5. Organics Diversion Policies & Programs for Business & Apartments	2023	Environmental Services	TBD following Action 3	11,390	0	-11	High
6. Organics Processing Facility	2026	LDRWMA	LDRWMA potential increase to environmental fee	1,100	0	-34	High
7. Variable Size Cart Program	2026	Environmental Services	$300K & $20K ongoing	4,800	1.6	32	High

POTENTIAL ACTIONS FOR FUTURE CONSIDERATION

Waste-related GHG reduction action 8 has not had its GHG reductions quantified due to a higher level of uncertainty of the direct GHG reduction impacts. Given less certainty around the cost-effectiveness, these will be considered by City of Leduc as other resources become available. Nevertheless, these actions have been deemed as important to remove barriers or support other actions.

8. **ADDITIONAL TYPES OF MATERIALS RECYCLED – Determine the feasibility of reduce, reuse options and recycling additional waste streams.**

   The City of Leduc will continue to explore the practical feasibility, market for and cost effectiveness of additional materials. The public has demonstrated interest in having metals, glass, mattresses and Styrofoam recycled, therefore Leduc will continue to investigate options to help divert these materials from the landfill.

7.7 Education and Other Actions

The actions included in this section are considered cross-cutting and will likely impact each sector. They are resourcing and/or education actions that could enable the uptake of many of the GHG reduction actions contained in this plan.

Education is the cornerstone to tackling climate change as many actions require the general public and/or businesses to change behaviour or accept a new technology. Education on climate change will need to draw upon existing resources, such as the Alberta Narratives project, on how best to frame the relevant issues.[34] Communication efforts will need to recognize the significance and gravity of climate change, while pointing to solutions and a path forward with benefits that extend beyond GHG reductions.

As already mentioned, successful education strategies will draw upon social marketing (including community-based social marketing techniques). Social marketing sells ideas, attitudes and behaviours (instead of commercial products) with rational arguments presented in a way that appeals to their core values. Community-based social marketing is founded on social science theories that behaviour change is most effective when delivered at the community level. Social science insights on human behaviour can more effectively achieve changes in habits and actions.

ACTIONS

1. **Create a GHG reduction education and outreach hub.**

   The City of Leduc will build an education and outreach hub to communicate all of its past and present programs, policies, and projects that are covered by this plan.

2. **Introduce additional staffing resources to support the implementation of this plan.**

   Given the frequency of involvement of the Environmental Services department in actions outlined in this plan, it is recommended that additional staff resources are secured. Additional staff resources would ensure high follow through of actions contained within this plan.

   The Environmental Services Department requires half of a full time equivalent to ensure appropriate resourcing. Ideally, this staff person has skills in environmental education and social marketing techniques given the numerous education campaigns proposed.

   A business case has been developed for staff resources to support the implementation of this plan for submission in Budget 2020.

8 Leduc GHG Reduction Targets

A GHG reduction target provides a municipality a goal to strive towards in pursuing GHG reductions. Some municipalities opt for a visionary target, often aligned with an international science-based target, to significantly motivate the municipality's climate actions. The City of Leduc wanted to set a practical, achievable target built from the bottom-up using cost-effective actions as its basis. It was also important that these actions are supported by both the public and council.

The City of Leduc have chosen an overall target of **reducing GHG emissions 3% below business-as-usual projections by 2030**. This target can also be described as: 3% above 2015 baseline year emission levels. Achievement of the City of Leduc GHG reduction target requrires actions at both the corporate level and a community level.

The corresponding targets are:

CORPORATE TARGET: 20% reduction below business-as-usual by 2030 or an 8% reduction below 2015 emissions levels

COMMUNITY TARGET: 3% reduction from business-as-usual by 2030 or for emissions at 6% above 2015 levels.

The City of Leduc is considering selling some of its emission reductions from projects such as solar installed on City buildings and the biocover being installed on the LDFWMF. If the City chooses to sell their emission reductions into the offset system, they will no longer count these emission reductions towards meeting their GHG reduction target.

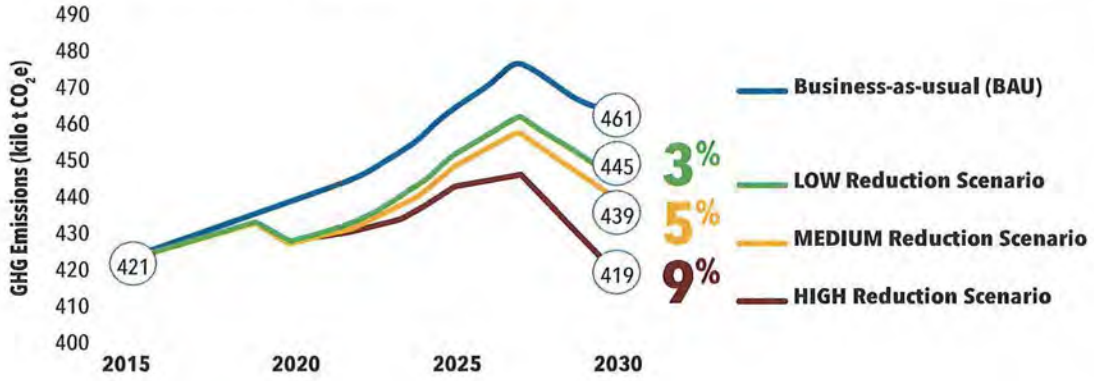
Exhibit 17

MODELLED ACTIONS Included in the High, Medium and Low Scenarios

LOW SCENARIO 3% GHG Reduction Target	MEDIUM SCENARIO 5% GHG Reduction Target	HIGH SCENARIO 9% GHG Reduction Target
LED Streetlights	Create Energy Efficiency Champions	Green Building Standard for City
Solar on LRC, Operations Buildings	Promote Efficiency and Renewable Programs, GHG Education Hub	Electric Commuter Bus
Energy Retrofits to City Buildings	City to Buy Best-in-Class New Fleet	Organics Processing Facility
Infill – High Density Development	EV Public Charging Stations and Policy	PACE (Residential & Commercial Buildings)
Mixed Use Development	Enhanced Commuter Transit	Waste Reduction Education for Business & Apartments
Biocover For Landfill	Promote Active Transport, Enhance Transit & U-Pass Marketing	Organics Diversion Policies & Programs for Business & Apartments
Garbage Baling	Promote Secondary Suites	Variable size cart program
Tree Planting	Lower Tippage Fees for Organics	New Solar for City Buildings

Exhibit 18

TARGETS for Low, Medium and High Scenarios

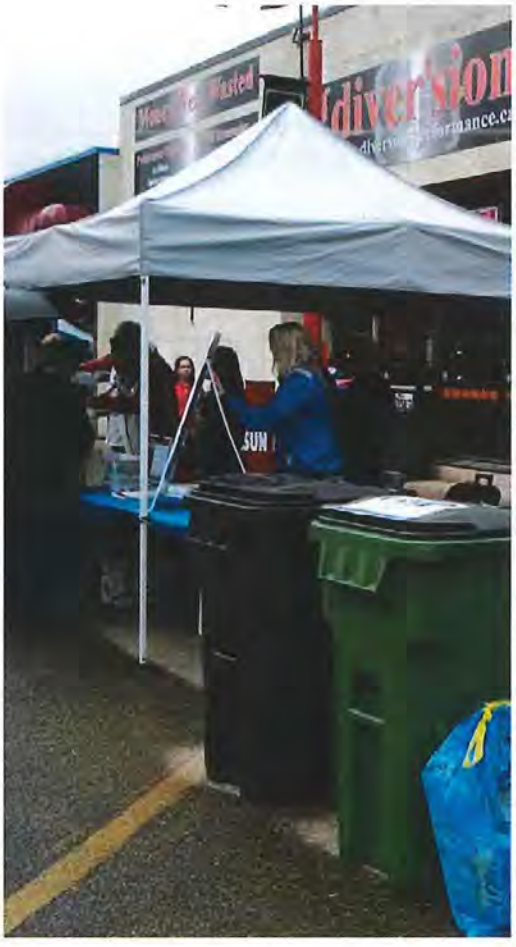


8.1 Scenarios

GHG reduction actions were grouped into three different scenarios *(Exhibit 17)* – high, medium and low GHG reduction scenarios. Actions are cumulative – so low and medium scenarios are also included in the high scenario. Three targets were considered for the low, medium and high scenarios *(Exhibit 18)*. If all actions in this plan were implemented, Leduc would expect to achieve a 9% reduction below business-as-usual or an absolute reduction of 1% below 2015 levels.

Budgetary constraints at the time of plan approval prompted staff to take the cautionary approach to commit to a 3% target and associated low scenario actions. All medium and high scenario actions have also been included in this plan to serve as a road map for further implementation as resources become available of the next 10 years.

Finally, some actions from the medium and high scenario may be implemented given there is low or no cost to the City of Leduc (e.g. PACE, Organics Diversion Policies and Programs for Businesses and Apartments, Organics Processing Facility). In this case, the City would likely exceed their GHG reduction target.



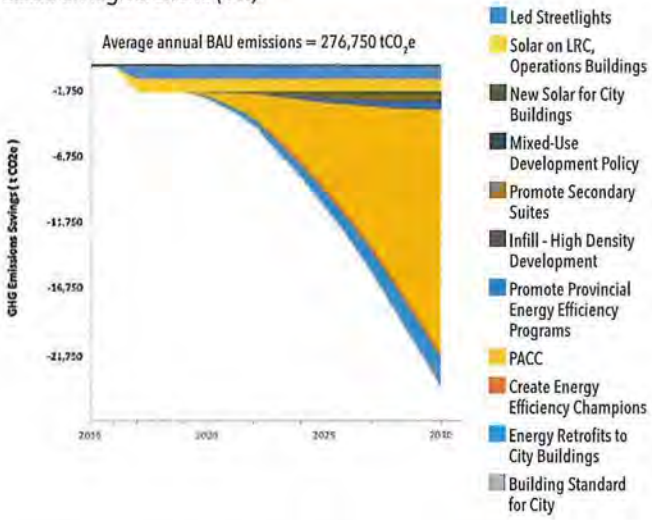
8.2 Actions Impacts

Recall that a "wedges" diagram highlights individual emission reduction actions as wedges that collectively meet a specified target.[35] The size and shape of each wedge can indicate the relative contribution overtime from each action or sector. In the buildings, energy supply and land use wedge diagram, PACE has by far the greatest impact with Energy Retrofits to City Buildings, LED Streetlights, Solar on LRC, Operations Buildings, and Promoting Provincial Energy Efficiency programs having the next notable impacts *(Exhibit 19)*. The impacts of the land-use actions are split between two figures - the buildings related impacts are in the buildings diagram and the transportation related emissions savings are in the transportation diagram.

For transportation related actions, the active transportation education campaign by far has the greatest GHG impact (*Exhibit 20*). Infill and mixed-use development policies also have notable effects, especially considering the buildings related portions of their impacts are in *Exhibit 19*. Enhanced Commuter Transit and Enhanced Transit Marketing merit mention. Recall that the Electric Commuter Bus action could have a greater impact if more than one bus was purchased.

Exhibit 19

BUILDINGS, ENERGY SUPPLY & LAND USE Wedges Diagram, 2020-2030
Based on high scenario (9%)



Garbage baling and the biocover provide by far the greatest waste related impacts *(Exhibit 21)*. However, attention should not be drawn away from the other waste related actions. Recall that the biocover emission reductions were likely over estimated by roughly 20%. Also, the garbage baling emission reductions are uncertain until further study or evidence is obtained.

Exhibit 20

TRANSPORT Wedges Diagram, 2020-2030
Based on high scenario (9%)

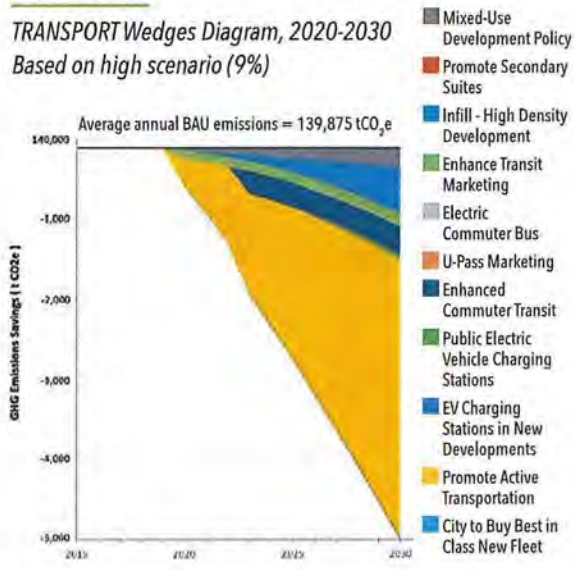
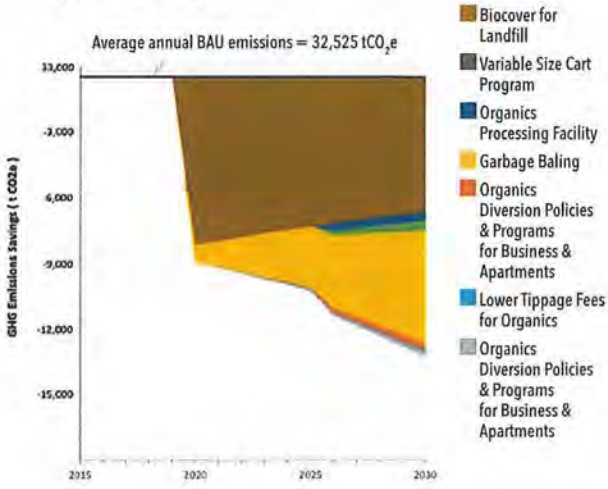


Exhibit 21

WASTE Wedges Diagram, 2020-2030
Based on high scenario (9%)



9 Costs and Benefits

The GHG Emission Reduction Action Plan includes the program and projected expenditures for the City of Leduc outlined in *Exhibit 22*. Approval of the plan does not automatically approve these expenditures. Council will review annually and approve any proposed programs and their associated expenditures.

9.1 Expected Costs

LOW SCENARIO – Actions to achieve a 3% target

Note there are no new costs associated with the actions in the "low" scenario.

MEDIUM SCENARIO – Actions to achieve a 5% target

The medium scenario actions include $1,205,000 in operating costs, $490,500 in staff-related costs and $722,000 in one-time costs over 11 years (2020 - 2030).

The operational costs that would continue at the end of ten years includes $200,000 in operating for the enhanced commuter transit actions and all staffing costs.

HIGH SCENARIO – Actions to achieve a 9% target

In addition to the medium costs, the high scenario actions include an expected $185,000 in operating costs, up to $981,000 in staff-related costs and $1,570,000 in one-time costs over 11 years (2020 - 2030).

The operational costs that would continue at the end of ten years include $25,000 in operating for building standards, variable sized cart program and all staffing costs.

Some costs (e.g. electric buses) are incremental to what Leduc would need to pay as compared to a new conventional bus. Costs that have already been approved or the City of Leduc does not have to pay (e.g. LDRWMA) were not included in *Exhibit 22*.

Exhibit 22

New operations, staffing and one-time costs (combined) 2020 through 2030.

	Buildings				Energy Supply	Land Use	Transit/Active Transportation			Transport	Waste	
	Green Building Standards for New City Buildings	Create Energy Efficiency Champions	Promote Efficiency and Renewable Programs, GHG Education Hub	PACE	New Solar on Existing City Buildings	Promote Secondary Suites	Promote Active Transport Enhance Transit & U-Pass Marketing	Enhance Commuter	Electric Commuter Bus	Electric Vehicle Charging Stations & Policy	Waste Diversion Education, Policies & Programs for Businesses & Apartments	Variable Size Cart Program
Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Medium	N/A	$40,000	$595,000	N/A	N/A	$10,000	$50,000	$1,600,000	N/A	$122,000	N/A	N/A
High	$297,000			$248,500 - $490,500	$728,000				$269,000		$550,500	$400,000
Total Medium & High	$297,000	$40,000	$595,500	$248,500 - $490,500	$728,000	$10,000	$50,000	$1,600,000	$269,000	$122,000	$550,500	$400,000
Benefits Include	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Increased fare revenue	Increased fare revenue	Avoided fuel costs	Avoided fuel costs	Potential savings depend on tipping fees at LDRWMF	

See Appendix A for a full breakdown of the expected operational, staffing and one-time costs for each action over 11 years (2020 - 2030).

9.2 Tax Implications

There are no new tax implications for the 3% target and associated actions.

Based on operational costs to meet the 3% target, the tax implications would, on average, range from $5 to $7 per Leduc household per year in the medium scenario and $8 to $11 per household per year in the high scenario over the next 11 years (2020 - 2030).

The incremental one-time capital costs are $722,000 in the medium scenario and $1,568,670 in the high scenario over 11 years (2020 - 2030) for a total of $2,290,670 in capital costs.

In addition, staffing resources of $44,000 per year to fund a 0.5 full time equivalent (FTE) plus a one-time staff start up costs of $6,500 are required under the medium scenario.

The high scenario action items require an additional $66,000 - $88,000 per year plus $13,000 in one-time start up staffing costs to fund an incremental 0.75 - 1.0 FTE.

These cost figures assume that no grants would be obtained. If the City of Leduc, continues to remain committed to innovative GHG reduction projects, it is likely that grants will continue to be available provincially and federally.

9.3 Benefits

In addition to evaluating the costs of each action, estimates were made on the benefits of each action. The model then compared the costs and benefits of each action and only those actions with a positive benefit cost ration were included. In other words, if costs were higher than benefits, the action was eliminated from the plan.

In some cases, benefit calculations are straightforward, such as savings on an electricity bill from using less power, or fuel savings from driving less.

In other cases benefits are less tangible, but are still important to consider e.g. long term savings if organics are diverted instead of building a new landfill.

Benefits can also be attributed to residents, business and/or civic operations. Examples of benefits assumptions include:

- The benefits from land-use are on average $60 per household based on transportation fuel cost savings, and energy saved from more energy efficient households. Benefits come to those who have increased access to transit, greater ability to walk to services/work, and new housing that uses less energy.
- The benefits from transit are on average $35 per household. Benefits come to those who use transit and benefit from related transportation cost savings such as fuel.

See Appendix B for more information.

10 Monitoring Plan

The City of Leduc will report annually against their progress towards GHG actions outlined in this plan. The indicators outlined in this section will also help the City of Leduc monitor the success of their GHG Reduction Action Plan. Monitoring will indicate the success of specific initiatives as well as the City's overall effort towards meeting their GHG reduction target. The sources for select indicators have also been provided. We also recommend a five-year review to update their GHG reduction inventory to further report against their progress.

10.1 For Future Reporting

- Leduc's GHG emissions - progress towards the overall 5% target
- Leduc's GHG emissions – Corporate
- Leduc's GHG emissions – Community
  - Obtained through inventory updates

10.2 Energy Supply

- CORPORATE: MW of installed renewable energy
  - Obtained through facility and property services department
- COMMUNITY: MW of installed renewable energy
  - Can likely be obtained through Energy Efficiency Alberta or potentially the Canadian Solar Industry Association (CanSIA)

10.3 Buildings

- CORPORATE: energy consumption per square foot
  - Obtained through facility and property services department
- Number of PACE loans
  - Can likely be obtained through Energy Efficiency Alberta
- Participation in EEA's programs (as compared to the provincial average or an average for medium sized cities)
  - Can likely be obtained through Energy Efficiency Alberta

10.4 Transportation

- Public transit GHG emissions per VKT
  - Obtained through inventory updates or Facility and Property Services
- Transit ridership
  - Obtained through Transportation Department
- Commute to work mode split
  - Statistics Canada Census

10.5 Land Use

- Density of new growth
- Amount and density of infill (not in a new subdivision)
- Dwellings within a 10-minute walk of services
- Dwellings within a 10-minute walk to a grocery store
- Dwellings within a 10-minute walk of the downtown area
- Number of secondary suites

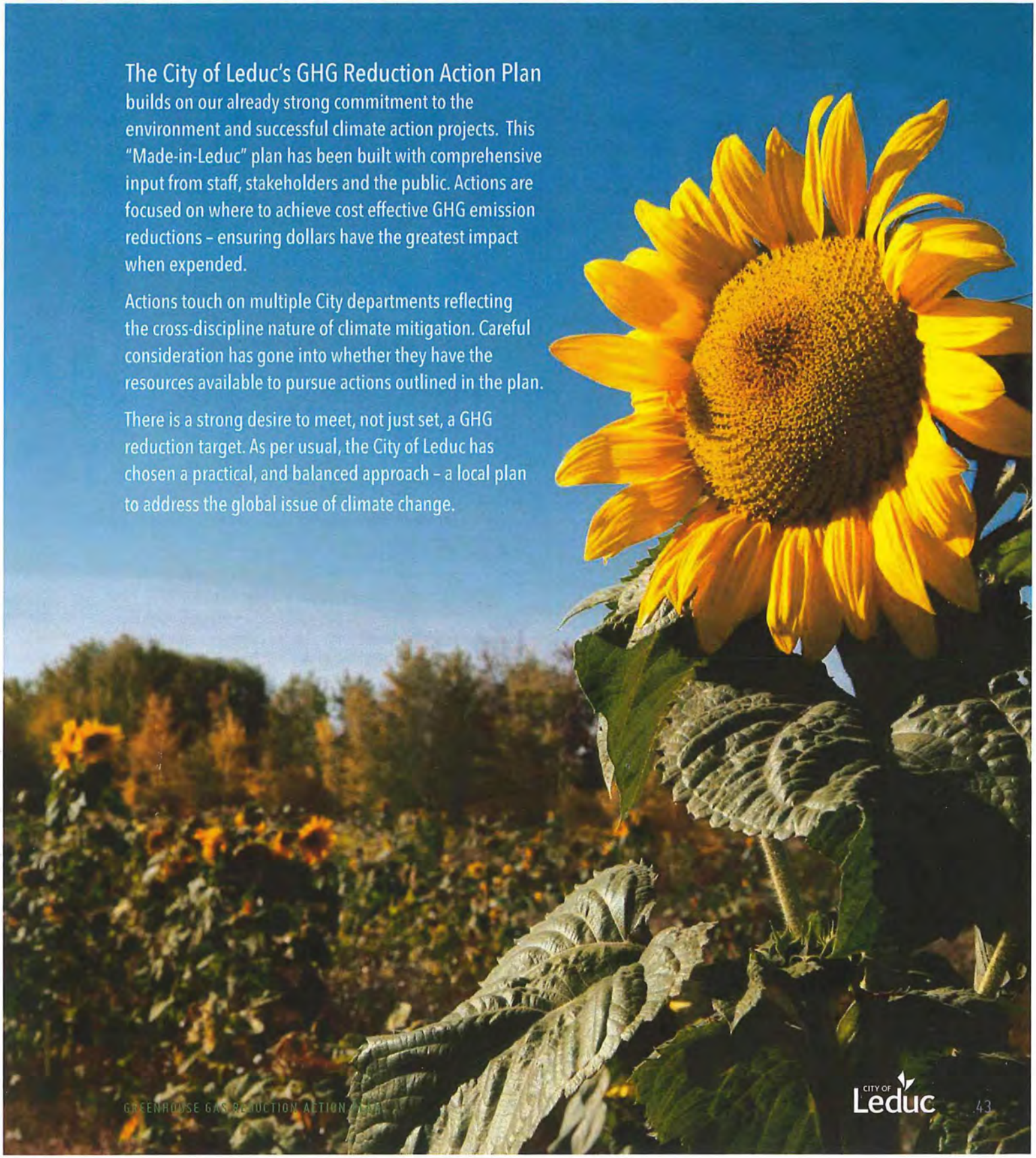
All of these indicators would be obtained from City of Leduc Planning & Development.

10.6 Waste

- % recycling diverted
- % of organics diverted
- Distance organics travel for processing

All of these indicators would be obtained from City of Leduc Environmental Services.

11 Conclusion



The City of Leduc's GHG Reduction Action Plan builds on our already strong commitment to the environment and successful climate action projects. This "Made-in-Leduc" plan has been built with comprehensive input from staff, stakeholders and the public. Actions are focused on where to achieve cost effective GHG emission reductions – ensuring dollars have the greatest impact when expended.

Actions touch on multiple City departments reflecting the cross-discipline nature of climate mitigation. Careful consideration has gone into whether they have the resources available to pursue actions outlined in the plan.

There is a strong desire to meet, not just set, a GHG reduction target. As per usual, the City of Leduc has chosen a practical, and balanced approach – a local plan to address the global issue of climate change.

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13 Footnotes

[1] Government of Canada. (2015, 11 30). *Frequently Asked Questions about Climate Change*. Retrieved from Government of Canada: https://www.canada.ca/en/environment-climate-change/services/climate-change/frequently-asked-questions.html

[2] Stocker, T. D.-K. (2013). *Summary for Policymakers in: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge, UK & New York, USA: Cambridge University Press. (Stocker, 2013)

[3] National Oceanic and Atmospheric Administration, *What's the Difference Between Climate and Weather* http://www.noaa.gov/explainers/what-s-difference-between-climate-and-weather.

[4] Intergovernmental Panel on Climate Change, M.-D. V.-O. (2018). *Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of.* Geneva: World Meteorological Organization.

[5] Reference footnote 4.

[6] National Round Table on the Environment and the Economy. (2011). *Paying the Price: The Economic Impacts of Climate Change for Canada.* Ottawa: National Round Table on the Environment and the Economy.

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[8] EnviroEconomics. (2009). *Act Locally – The Municipal Role in Fighting Climate Change.* Ottawa: Federation of Canadian Municipalities.

[9] Or 1% GHG emission reductions below 2015 levels.

[10] 26% corporate GHG reductions and 8% community GHG reductions below business-as-usual - see page 51 for more information on Leduc's GHG reduction targets.

[11] For the purposes of this figure, streetlight and water and wastewater GHGs were divided into the residential and commercial sectors according to their relative contributions in the community inventory. Corporate buildings GHG emissions were added to the commercial sector.

[12] Our approach differs from many wedges diagrams which show emissions increasing overtime (upwards trajectory on a graph) and use the wedges to stabilize GHG emissions overtime.

[13] We calculate the cost per tonne of carbon reduced by subtracting the costs from the benefits divided by the lifetime GHG reductions (all time discounted to provide the current monetary and environmental "worth" of each value).

[14] Environment and Climate Change Canada. (2018). National Inventory Report 1990-2016: Greenhouse Gas Sources and Sinks in Canada. Ottawa: Government of Canada.

[15] This completed action was included in the Plan as it was post 2015 – the GHG inventory year. Therefore, it contributes to the City of Leduc's GHG reduction target. In addition, the idea was developed and implemented during the period the GHG Reduction Plan was being developed.

[16] Our modelling used a conservative estimate of 30 years lifespan for a new home.

[17] In Alberta, municipalities currently do not have jurisdiction to require greater efficiency improvements the provincial building code.

[18] This completed action was included in the Plan as it was post 2015 – the GHG inventory year. Therefore, it contributes to the City of Leduc's GHG reduction target. In addition, the idea was developed and implemented during the period the GHG Reduction Plan was being developed.

[19] LED streetlights rightfully fits into its own sectoral category but for ease this section has been expanded to including buildings and other infrastructure.

[20] York, D., Molina, M., Neubauer, M., Nowak, S., Nadel, S., Chittum, A., Elliott, N., Farley, K., Foster, B., Sachs, H., & Witte, P. 2013

[21] Depending on Facilities Master Plan, approved budgets and future technological advancements (e.g. solar costs).

[22] For buildings with renewable energy units on the roof.

[23] For buildings with thicker walls due to increased insulation.

[24] Reference footnote 23.

[25] Refernece footnote 23.

[26] Sells ideas, attitudes and behaviours (instead of commercial products) with rational arguments presented in a way that appeals to their core values. Community-based social marketing is founded on social science theories that behaviour change is most effectively achieved through initiatives delivered at the community level.

[27] These buses have seating for approximately 42 passengers.

[28] Baldasano, J. M. (2003). Environmental Performance Review and Cost Analysis of MSW Landfilling by Baling-Wrapping Technology. *Waste Management*, 796-806.

[29] Ontario Waste Management Association (OWMA). (2014). *Disposal Levies - Rethink Policy Paper Series.* Brampton: OWMA.

[30] Government of British Columbia. (2019). *Residential Organic Waste Diversion*. Retrieved from Government of British Columbia: https://www2.gov.bc.ca/gov/content/environment/waste-management/food-and-organic-waste/organic-waste-diversion/residential-organic-waste-diversion(

[31] Assuming 50% of organic waste goes to each facility and includes the return trip.

[32] Kelleher, M. R. (2005). *Taking Out the Trash: How To Allocate the Costs Fairly, No. 213.* CD Howe Institute.

[33] See reference page 31.

[34] Marshall, G. B. (2018). *Communicating Climate Change and Energy in Alberta - Alberta Narratives Project.* Oxford: Climate Outreach.

[35] Our approach differs from many wedges diagrams which show emissions increasing overtime (upwards trajectory on a graph) and use the wedges to stabilize GHG emissions overtime. We demonstrate where emissions are projected to go and how the actions would reduce these emissions to a specified level.

A APPENDIX
City of Leduc Costs

This Appendix reflects the new costs that would be incurred to achieve the actions.

Note there are no new costs associated with the actions in the "low" scenario.

MEDIUM SCENARIO – Actions to Achieve a 5% target

The medium scenario actions include: **$1,205,000** in operating costs, **$490,500** in staffing costs and staff set up costs and **$722,000** in capital or one-time costs over 11 years (2020 - 2030).

HIGH SCENARIO – Actions to Achieve a 9% target

In addition to the medium scenario costs, the high scenario actions require the following incremental costs:$185,000 in operating costs, up to $937,000 staff and staff start up costs and $1,568,670 in capital, or one-time costs over 11 years (2020 - 2030).

The total costs to achieve the 9% target are: **$1,390,000** in operating costs, up to **$1,427,500** in staffing costs and staff set up costs and **$2,290,670** in capital, or one-time costs over 11 years (2020 - 2030).

The year 2031 is shown in order to reflect costs that would continue at the end of 11 years.

Exhibit 23

INCREMENTAL OPERATING, STAFF AND CAPITAL EXPENDITURES FOR THE MEDIUM SCENARIO ACTIONS

													Sub-total
Action	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2020-2030**
Create Energy Efficiency Champions	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	0	**40,000**
Promote Efficiency and Renewables, GHG Education Hub	80,500	74,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	49,000	**595,500**
City to Buy Best-in Class New Fleet	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Promote Active Transportation	16,667												**16,667**
EV Charging Stations and Policy	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Enhanced Commuter Transit - Capital	0	0	0	0	0	0	600,000	0	0	0	0	0	**600,000**
Enhanced Commuter Transit - Operating	0	0	0	0	0	0	200,000	200,000	200,000	200,000	200,000	200,000	**1,000,000**
U-Pass Marketing	16,667	0	0	0	0	0	0	0	0	0	0	0	**16,667**
Enhanced Transit Marketing	16,667	0	0	0	0	0	0	0	0	0	0	0	**16,667**
Promote Secondary Suites	0	0	0	3,333	3,333	3,333	0	0	0	0	0	0	**9,999**
Lower Tippage Fees for Organics	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Public Electric Vehicle Charging Stations - Operating	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Public Electric Vehicle Charging Stations - Capital	0	0	0	0	0	0	110,000	2,000	2,000	4,000	4,000	0	**122,000**
TOTAL OPERATING	**80,001**	**30,000**	**5,000**	**13,333**	**13,333**	**13,333**	**210,000**	**210,000**	**210,000**	**210,000**	**210,000**	**205,000**	**1,205,000**
TOTAL STAFF	**50,500**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**44,000**	**490,500**
TOTAL CAPITAL	0	0	0	0	0	0	710,000	2,000	2,000	4,000	4,000	0	**722,000**

Exhibit 24

INCREMENTAL OPERATING, STAFF AND CAPITAL EXPENDITURES FOR THE HIGH SCENARIO ACTIONS

Action	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Sub-total 2020-2030
Green Building Standard for City - Capital	0	0	0	0	0	0	59,394	56,731	54,204	51,807	49,533	0	**271,670**
Green Building Standard for City - Operating	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	**25,000**
PACE	0	28,500 - 50,500	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	22,000 - 44,000	**226,500 - 446,500**
New Solar for City Buildings - Capital	0	0	0	248,000	240,000	240,000	0	0	0	0	0	0	**728,000**
Electric Commuter Bus – Capital	0	0	0	0	0	0	269,000	0	0	0	0	0	**269,000**
Waste Reduction Education for Business & Apartments	80,500	74,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	**550,500**
Variable Size Cart Program	0	0	0	0	0	0	300,000	0	0	0	0	0	**300,000**
Variable Size Cart Program - Operating	0	0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	**100,000**
TOTAL OPERATING	**30,000**	**30,000**					**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**185,000**
TOTAL STAFF	**50,500**	**72,500 - 94,500**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**66,000 - 88,000**	**717,000 - 937,000**
TOTAL CAPITAL	**0**	**0**	**0**	**248,000**	**240,000**	**240,000**	**628,394**	**56,731**	**54,204**	**51,807**	**49,533**	**0**	**1,568,670**

Exhibit 25

TOTAL INCREMENTAL OPERATING, STAFF AND CAPITAL EXPENDITURES FOR THE MEDIUM AND HIGH SCENARIO ACTIONS

													Sub-total
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2020-2030
MEDIUM SCENARIO OPERATING	$80,001	$30,000	$5,000	$13,333	$13,333	$13,333	$210,000	$210,000	$210,000	$210,000	$210,000	$205,000	**$1,205,000**
MEDIUM SCENARIO STAFF	$50,500	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	$44,000	**$490,500**
MEDIUM SCENARIO CAPITAL	$0	$0	$0	$0	$0	$0	$710,000	$2,000	$2,000	$4,000	$4,000	$0	**$722,000**
HIGH SCENARIO OPERATING	$30,000	$30,000	$0	$0	$0	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	**$185,000**
HIGH SCENARIO STAFF	$50,500	$72,500 - $94,500	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	$66,000 - $88,000	**$717,000 - $937,000**
HIGH SCENARIO CAPITAL	$0	$0	$0	$248,000	$240,000	$240,000	$628,394	$56,731	$54,204	$51,807	$49,533	$0	**$1,568,670**
TOTAL MEDIUM & HIGH OPERATING	$110,001	$60,000	$5,000	$13,333	$13,333	$13,333	$235,000	$235,000	$235,000	$235,000	$235,000	$230,000	**$1,390,000**
TOTAL MEDIUM & HIGH STAFF	$101,000	$116,500 - $138,500	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	$110,000 - $132,000	**$1,207,500 - $1,427,500**
TOTAL MEDIUM & HIGH CAPITAL	$0	$0	$0	$248,000	$240,000	$240,000	$1,338,394	$58,731	$56,204	$55,807	$53,533	$0	**$2,290,669**

CITY OF Leduc

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B APPENDIX

Technical, Modelling Assumptions Report

December 2018

- Economic Appraisal of GHG Mitigation Actions
- Approach
- General Assumptions
- Key Assumptions for Mitigation Actions
- Summary of Costs and Benefits
- References

CITY OF Leduc

City of Leduc GHG Reduction Plan Technical Information

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Economic Appraisal of GHG Mitigation Actions

This Appendix summarises the methodology used for the economic appraisal of GHG mitigation actions considered in the City of Leduc's Greenhouse Gas Reduction Plan (the "Plan"). Key data inputs and assumptions are also identified.

A long-list of candidate GHG mitigations actions were identified through the planning process and associated engagements with city staff and other stakeholders. The purpose of the economic appraisal of mitigation actions was twofold:

1. To screen the full list of identified actions based on their cost-effectiveness. The cost-effectiveness of actions in reducing GHG emissions was a key determinant of whether they were retained in this iteration of the Plan or parked for future consideration.

2. To generate high-level estimates of the economic costs and benefits of packages of cost-effective actions to achieve different level of GHG reductions by 2030. The distribution of costs and benefits between sources of GHG emissions, and between the City of Leduc and the wider community were also assessed. This included analysis of the potential property tax implications of funding those actions in the Plan to be delivered by the City of Leduc.

The economic appraisal of actions provides indicative estimates of potential costs and benefits and associated distributional impacts, based on the best available information at the time of the analysis. In the absence of detailed implementation plans for each action, it is necessary with this type of screening analysis to make assumptions relating to, for example, the capital and operating costs of actions, adoption and participating rates, waste diversion rates, life times of equipment and technologies,

timelines for implementing actions, the effectiveness of actions in reducing energy use and greenhouse gas emissions, etc. Assumptions were formed largely based on consultation between the project team and City staff—informed by information from relevant literature. Unless otherwise noted, City staff provided preliminary cost data for the analysed actions. City staff also set assumptions governing the scope and implementation timelines of actions.

It is expected that as actions in the Plan are considered for implementation—in particular, those that require capital investment such as for an electric commuter bus—that detailed (technical and financial) feasibility studies will be undertaken. This will likely result in revisions to the precise scope of actions as described in the Plan.

The remainder of this Appendix provides: a brief description of the overall approach to the economic appraisal of actions; generic inputs and assumptions that apply across more than one emission source; and key assumptions that apply to each action included in the Plan. Information is not provided on actions that did not pass the screening test.

Approach

The economic appraisal of GHG reduction actions in the Plan is undertaken using the Community Inventory and Economic Assessment Tool (CI-EAT): a suite of energy-GHG-economic models of energy use (and associated GHG emissions and costs) by residential, commercial, public and industrial buildings and processes, road (passenger and freight) transportation, public (bus) transit, and waste management. In addition to appraising actions that directly mitigate emissions from these sources, CI-EAT can also evaluate changes in land-use density via resultant impacts on building energy use and transport demand. Note: **CI-EAT generates energy use, GHG emission and economic impact (costs and benefits) projections, with and without additional planned mitigation actions, simultaneously**.

The basic approach followed to appraise GHG reduction actions in the Plan is illustrated in panels (a) – (e) of **Error! Reference source not found.**:

Step 1 (**panel a**) A GHG emission inventory, by source sector, activity (e.g., end-use) and fuel is generated for the 2015 base year. At the most basic level, total GHG emissions from a source sector is given by the product of an activity indicator, the energy intensity of that activity and the GHG intensity of the energy—summed over all fuels, end-uses and relevant activities. Where possible, Leduc specific data is used; otherwise, default values for Alberta are used.

Step 2 (**panel b**) Each determinant of base year GHG emissions is projected into the future, using a combination of the City of Leduc's own forecasts (e.g., for population and homes), projections from the literature (e.g., for the fuel economy of new passenger cars), and algorithms already in the models, which have been derived from statistical analysis of relevant City of Edmonton, City of Calgary and Alberta data (e.g., the relationship between demand for light-duty vehicles and the number of

households). Projections of activity indicators were generated for the period 2015-2030.

As the economic analysis considers the life-cycle impacts of each mitigation action, including actions implemented in 2030 that have an assumed life of 50 years, projections of other determinants of GHG emissions (e.g., vehicle fuel economy, distances travelled per year) were made through 2080. For the economic analysis, all price and valuation data were also projected through 2080 and expressed in 2018 constant dollars.

Step 2 (**panel c**) The primary outcome of Step 2 is a Reference Case projection of GHG emissions for Leduc covering the period 2015-2030, which is disaggregated by emission source sectors, relevant activities and fuels.

Step 3 (**panel d**) Projects, programs and policies ('actions') are identified to reduce GHG emissions from each source, starting in 2020. A broad range of different actions is considered to: (1) reduce activities that generate GHG emissions, (2) improve the energy intensity of the activities, and (3) switch to less GHG-intensive energy sources. The cost-effectiveness of each action in reducing GHG emissions is assessed, with actions that achieve a specified level cost-effectiveness retained for potential inclusion in the Plan (this process is explained below). With input from City decision-makers, cost effective actions are packaged into emission reduction scenarios (e.g., low, medium and high).

Step 4 (**panel e**) The cumulative emission reductions of all actions contained within a given emission reduction scenario are subtracted from Reference Case, producing a new potential path for future GHG emissions from Leduc—the Reduction Scenario. Most actions considered for inclusion in the Plan are assumed to be implemented between 2020 and 2030; the exceptions are the solar PV units installed at the Rec Centre and the City Operations Building and the LED streetlights, which were installed prior to 2020. As noted above, the economic analysis captures the full life-cycle energy and emission savings and associated economic impacts of all actions, regardless of the year in which they are assumed to be implemented.

Cost-effectiveness and net present value of actions

To inform decisions regarding the potential inclusion of mitigation actions in the Plan, the incremental cost-effectiveness (ICE) of each action (i) in reducing GHG emissions from each source was calculated.

Mitigation actions did <u>not pass</u> the initial screening analysis if: ICE_i > \$30 per tonne of CO_2e saved.

Actions with an ICE_i greater than \$30 per tonne of CO_2e saved would not break-even (from a financial perspective) after the current value of the Carbon Levy in Alberta was internalized in the analysis (i.e.,

treating reductions in Carbon Levy payments as an operational cost saving). Put another way, actions included in the Plan make financial sense, on average.

Actions that passed the initial screening analysis were then subject to cost-benefit analysis. The present value costs (in 2018), present value benefits, net present value and benefit-cost ratio was calculated for each mitigation action, and for each emission Reduction Scenario (low, medium and high). The net present value (NPV) and the Social Cost of Carbon in years were assessed. The net present value of an action indicates the extent to which present value benefits exceed present value costs, and thus how much society is made better off (in monetary terms) by having the action implemented.

Simulated Property Tax Impacts

As part of the economic analysis of GHG mitigation actions, potential impacts on residential property taxes were simulated. Note: the results of this exercise should not be interpreted as definitive, planned changes to property taxes, but rather as illustrations of potential impacts assuming the full cost of those actions funded by the City of Leduc are recovered through property taxes.

Simulated impacts on residential property taxes were developed based on information obtained from the City of Leduc's tax assessment staff, the City's total revenue requirement for 2018 was about $45.8 million, of which $28.1 million (or 61%) was collected from the residential sector and about $17.7 million (39%) from the non-residential sector. Based on total assessed values in 2018, the residential total can be subdivided as follows: about 76% was sourced from single family dwellings and about 24% from "other" dwelling types.

Growth factors were applied to the City's total revenue requirement for 2018 to generate projections through 2030. In the absence of any other information (including projections of the assessed value of residential dwellings) it was necessary to assume that the residential sector's share of the total projected revenue requirement remains constant at 61% over the period 2018-2030. It is further assumed that the average assessed value of a single-family dwelling (about $348,000) and "other" dwelling types (about $248,000) in 2018 remains constant over the period 2018-2030.

The total number of residential homes in Leduc is assumed to grow in accordance with City projections (see Exhibit 7). Of the projected number of total homes, approximately 69% in 2020 are single-family dwellings, with the remaining 31% "other" dwelling types. By 2030, about 67% of all homes are single-family dwellings, with the remaining 33% "other" dwelling types.

Using the above listed information and assumptions, residential property taxes are simulated under a business-as-usual case. The next step involves estimating changes to taxes that could result if expenditures incurred by the City to implement the Plan are recovered through property taxes.

For the costs outlined in the medium and high scenarios, the resulting tax and budget implications are outlined below.

Costs Summary	Low Scenario – 3%	Medium Scenario – 5%	High Scenario – 9%
Operating:	$0	**$1,205,000** over ten years. Costs range from $0 to $320,000 per year 2020-2030, with $200,000 continuing as an operating cost into the future (for transit). Or **$3-$5** per typical Leduc household per year for a period of ten years, or **$30-$50** per household over ten years	$185,000 over ten years in addition to medium scenario costs, for a total of **$1,390,000.** Costs ranging from $0 to $30,000 per year 2020-2030, with $25,000 continuing as an operating cost into the future (for variable sized carts) Or **$4-$5.50** per typical Leduc household per year, or **$40-$55** per household over ten years
Capital:	$0	**$722,000** in 2026 (transit and electric vehicle charging stations starting in 2026)	$1,568,670 (building standards, solar, waste programs), plus medium scenario capital costs for total of **$2,290,670** between 2020 to 2030
FTE	0	0.5 FTE = **$44,000** operating (for GHG, energy efficiency, transit education) starting in 2020, and **$6,500** one-time start up. To be funded by an additional $0.50 increase in user fee.	On top of the medium scenario, another 0.5 FTE is required (for ICI/MF waste diversion and other initiatives) starting in 2020, to be funded by another 0.50 increase in the user fee. Total both medium and high scenario: **$88,000** operating for GHG, ICI + **$6,500** one-time, to be funded by $1.00 increase in user fee. In addition, 0.25 FTE will be required for Finance to administer the PACE program starting in 2021, for **$22,000** operating and **$6,500** one-time.

General Assumptions

Generic inputs to the suite of models used for the economic appraisal of GHG mitigation actions are provided in the tables below.

Exhibit 1 Energy Prices

Commodity	Units	Average 2020-2050
Gasoline	($ per GJ, $2018)	37.30
Diesel	($ per GJ, $2018)	36.95
Electricity:		
Residential	($ per GJ, $2018)	17.65
Non-residential	($ per GJ, $2018)	19.35
Natural gas:		
Residential	($ per GJ, $2018)	2.95
Non-residential	($ per GJ, $2018)	2.65

Notes:

Monthly average gasoline (regular at self service stations) and diesel (at self service stations) prices for Jan-Jul 2018 for Edmonton (Table 18-10-0001-01, Stats Canada)

Real price escalators for years after 2018 for gasoline and diesel (Reference Case, Canada's Energy Future 2017, National Energy Board)

Electricity and natural gas prices in 2017 (UCA - Historical Rates, Regulated Rate Option, 12-month average Jul 2017 - Jul 2018)

Real price escalators for years after 2018 for electricity and natural gas, by sector (Reference Case, Canada's Energy Future 2017, National Energy Board)

Exhibit 2 Carbon Valuation: Social Cost of Carbon

Valuation Basis	Units	Average 2020-2050
Social Cost of Carbon	($ per t CO_2e, $2018)	94.2

Notes:

Social Cost of Carbon (SCC) (mean value at 3% real annual discount rate), US EPA, https://www.epa.gov/climatechange/social-cost-carbon

The social cost of carbon (SCC) is used in economic analyses of climate mitigation policy to value the benefits of CO_2 reductions. The SCC is a measure of the expected net damages associated with global climate change that results from the release of an additional tonne of carbon dioxide (CO_2) to the atmosphere. It is intended to capture the monetized value of net impacts—negative and positive—from *inter alia* changes to agricultural productivity, human health, property damage from flooding, and the loss of ecosystem services because of climate change. The SCC is calculated as the net present value of the difference between economic costs under a baseline climate and socioeconomic scenario and the economic costs of the same scenario with an additional incremental pulse of CO_2 emissions. It is typically calculated using Integrated Assessment Models (IAMs). A recent estimate of the SCC from the US Environmental Protection Agency (EPA) is US$ 42 (2007 prices) per t CO_2 emitted in 2020. The value in Exhibit 2 are based on the US EPA recommended values, transferred for application in Alberta using best practice benefits transfer methods. Note that the value in Exhibit 2 is an average over the entire

projection period, which extends to 2080. The SCC rises over time; year-specific values are used in the appraisal of mitigation actions.

The carbon levy in Alberta is an attempt to internalize (via a carbon pricing mechanism) some portion of the SCC into energy use decisions.

Exhibit 3 Energy Density of Fuels

Energy density of fuels	Units	2020-40
Gasoline	(GJ per m^3)	34.660
Diesel	(GJ per m^3)	38.680
Propane	(GJ per m^3)	25.530
Natural gas	(GJ per m^3)	0.037

Notes:

National Energy Board, https://www.neb-one.gc.ca/nrg/tl/cnvrsntbl/cnvrsntbl-eng.html

GJ per cubic metre = MJ per litre

Exhibit 4 Global Warming Potentials

Global Warming Potentials	GWP 100-year
Carbon dioxide	1
Methane	34
Nitrous Oxide	298

Notes:

IPCC 5th Assessment Report, with carbon feedback

Exhibit 5 Discount Rates

Discount Rates	2020-50
Inflation (% per year)	1.96%
Real social discount rate (% per year)	3.50%
Nominal social discount rate (% per year)	5.53%

Notes:

Average annual rate of inflation in Alberta over period 2000-2018 (CPI: all-items), Table: 18-10-0004-11 (Stats Canada)

Real social discount rate from R Boyd et al, 2012, Economic Guidance for the Appraisal and Prioritization of Adaptation Actions, Ch. 7 Discounting Future Costs and Benefits, NRCAN

Exhibit 6 Emissions Savings Factors

Source of emission savings:	Units	2020-50
Gasoline		
Light duty vehicles	(t CO_2e per m^3)	2.396
Light duty trucks	(t CO_2e per m^3)	2.412
Diesel		
Light duty vehicles	(t CO_2e per m^3)	2.756
Light duty trucks	(t CO_2e per m^3)	2.756
Heavy duty trucks	(t CO_2e per m^3)	2.839
Propane		
Vehicles	(t CO_2e per m^3)	1.545
Natural gas		
Buildings	(t CO_2e per m^3)	0.002
Vehicles	(t CO_2e per m^3)	0.002
Electricity		
Grid displacement with renewables	(t CO_2e per MWh)	0.590
Change in grid electricity use	(t CO_2e per MWh)	0.640

Notes:

Table A6-12 NIR 1990-2014, Part 2 - (gasoline) light duty vehicle, Tier 1 and Teir 2 average

Table A6-12 NIR 1990-2014, Part 2 - (gasoline) light duty truck, Tier 1 and Teir 2 average

Table A6-12 NIR 1990-2014, Part 2 - (diesel) light duty vehicle, advanced and moderate controlled average

Table A6-12 NIR 1990-2014, Part 2 - (diesel) light duty truck, advanced and moderate controlled average

Table A6-12 NIR 1990-2014, Part 2 - (diesel) heavy duty truck, advanced and moderate controlled average

Table A6-12 NIR 1990-2014, Part 2 (propane)

Table A6-12 NIR 1990-2014, Part 2 (natural gas)

Table A6-2 NIR 1990-2014, Part 2 - Alberta marketable, and residential, commercial, institutional

Government of Alberta, Carbon Offset Emission Factors Handbook, March 2015 (electricity)

Exhibit 7 Residential Housing Stock, 2020-2030

Dwelling Type	Units	2020	2030
Population	(persons)	33,717	43,329
Residential - baseline			
Single-detached			
Existing units surviving previous year	(# of units)	8,704	11,553
New units added during year	(# of units)	234	298
Sub-total	(# of units)	8,938	11,851
	(% of total)	68.9%	68.4%
Ground-orientated			
Existing units surviving previous year	(# of units)	1,773	2,444
New units added during year	(# of units)	51	75
Sub-total	(# of units)	1,824	2,519
	(% of total)	14.1%	14.5%
Apartment			
Existing units surviving previous year	(# of units)	2,147	2,883
New units added during year	(# of units)	59	79
Sub-total	(# of units)	2,206	2,962
	(% of total)	17.0%	17.1%
Totals			
Existing units surviving previous year	(# of units)	12,624	16,880
New units added during year	(# of units)	344	452
Total	(# of units)	**12,968**	**17,332**
Size of new dwelling units			
Single-detached	(m^2 per unit)	190	187
Ground-orientated	(m^2 per unit)	148	146
Apartment	(m^2 per unit)	109	107

Notes:

2016 base year numbers of dwellings from 2016 property tax assessment, projected forward on basis of 50 year population and dwelling projections for Leduc

Average size of new dwelling units assumed to decrease by 5% by 2050 relative to 2015, Edmonton's Energy Transition Strategy

Exhibit 8 ICI Building Stock, 2020-2030

ICI Buildings	Units	2020	2030
Total floor space:			
Existing buildings surviving previous year	(m^2)	1,312,752	1,524,559
New buildings added during year	(m^2)	23,664	23,615
Total	(m^2)	**1,336,416**	**1,548,174**

Notes:

2016 base year floor space from 2016 property tax assessment, projected forward on basis of 50 year population for Leduc

Exhibit 9 Private Transportation: Vehicle Stock and Use, 2020-2030

Private Passenger Vehicles	Units	2020	2030
Light-duty vehicles:			
Stock on road	(#)	17,557	23,542
Total Vehicle Kilometres Travelled (VKT)	(million veh-km)	205	274
Average VKT	(km / veh)	11,652	11,652
Energy consumption	(GJ)	728,822	928,482
Light-duty trucks:			
Stock on road	(#)	14,159	21,510
Total Vehicle Kilometres Travelled (VKT)	(million veh-km)	175	265
Average VKT	(km / veh)	12,336	12,336
Energy consumption	(GJ)	763,704	1,112,608
Private passenger vehicles:			
Stock on road	(#)	31,716	45,052
Total Vehicle Kilometres Travelled (VKT)	(million veh-km)	379	540
Average VKT	(km / veh)	11,958	11,979
Energy consumption	(GJ)	1,492,526	2,041,090

Exhibit 10 City Transportation Fleet: Vehicle Stock and Use in 2015

City Fleet (excluding buses, off-road equip)	Units	2015
Light-duty vehicle:		
Vehicle demand	(#)	7
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	54,844
Average VKT	(km / veh)	7,835
Fuel use		
Gasoline	(litres)	16,719
Diesel	(litres)	0
Energy consumption	(GJ)	579
Fuel economy	(MJ / veh-km)	10.6
Light-duty truck:		
Vehicle demand	(#)	68
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	671,402
Average VKT	(km / veh)	9,874
Fuel use		
Gasoline	(litres)	134,124
Diesel	(litres)	29,818
Energy consumption	(GJ)	5,802
Fuel economy	(MJ / veh-km)	8.6
Heavy-duty vehicles:		
Vehicle demand	(#)	17
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	90,207
Average VKT	(km / veh)	5,306
Fuel use		
Gasoline	(litres)	0
Diesel	(litres)	62,438
Energy consumption	(GJ)	2,415
Fuel economy	(MJ / veh-km)	26.8
LATS:		
Vehicle demand	(#)	6
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	126,508
Average VKT	(km / veh)	21,085
Fuel use		
Gasoline	(litres)	47,601
Diesel	(litres)	0
Energy consumption	(GJ)	1,650
Fuel economy	(MJ / veh-km)	13.0
Organics trucks:		
Vehicle demand	(#)	2
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	176,758
Average VKT	(km / veh)	88,379
Fuel use		
Gasoline	(litres)	0
Diesel	(litres)	62,572
Energy consumption	(GJ)	2,420
Fuel economy	(MJ / veh-km)	13.7
Waste trucks:		
Vehicle demand	(#)	2
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	306,777
Average VKT	(km / veh)	153,389
Fuel use		
Gasoline	(litres)	0
Diesel	(litres)	108,599
Energy consumption	(GJ)	4,201
Fuel economy	(MJ / veh-km)	13.7
Recycling trucks:		
Vehicle demand	(#)	2
Total Vehicle Kilometres Travelled (VKT)	(veh-km)	369,751
Average VKT	(km / veh)	184,876
Fuel use		
Gasoline	(litres)	0
Diesel	(litres)	130,892
Energy consumption	(GJ)	5,063
Fuel economy	(MJ / veh-km)	13.7

Key Assumptions for Mitigation Actions

Key assumptions for individual GHG reduction actions included in the Plan are provided below, organized by broad emission source: energy supply; buildings; transportation; public transit; land-use; and waste management.

Energy Supply

Solar on LRC, Operations Buildings

Key assumptions:

- Total installed capacity is 1.76 MW.
- Functional life of units is 30 years.
- Costs are based on contract with ENMAX.

New Solar PV for City Buildings

Key assumptions:

- Total installed capacity is: 500 kW, which is installed in annual increments of 170 kW, 165 kW and 165 kW.
- Functional life of units is 30 years.
- Costs are based on contract with ENMAX.

LED Streetlights

Key assumptions:

- 2,693 streetlight bulbs replaced with LEDs.
- Functional life of units is 23 years.

Buildings

Building Standard for City

Key assumptions:

- Additions to City buildings amount 22,160 square metres by 2030, comprising:
  - New eco station building (2019) (93 m^2);
  - New fire hall (2023) (1115 m^2);
  - LRC expansion (2022) (372m^2);
  - West campus – twin arenas (2023), aquatic centre, public works satellite shop (2025), and two field houses (2027) (18,580 m^2);
  - PSB to add 2,000 m^2; and
  - The Alex Arena may be retired in 2025.
- All new buildings are constructed to be 5% more energy efficient than the prevailing code. This improvement applies to all end-uses (HVAC, water heating, lighting, equipment and motors).
- Electrical energy efficiency measures have an average functional life of 14 years; natural gas energy efficiency measures have an average functional life of 20 years.
- All new buildings are constructed with solar PV, which displaces 50% of baseline electricity use for lighting, equipment and motors.
- PV solar units have a functional life of 30 years.
- The purchase price and installation costs of all energy saving measures and renewable energy technologies are built into CI-EAT.

Energy Retrofits to City Buildings

Key assumptions:

- Range of lighting, HVAC and mechanical measures identified as part of a comprehensive energy retrofit program for existing City of Leduc buildings, including:
  - Lighting measures saving 401 GJ of electricity per year;
  - HVAC measures saving 98 GJ of electricity per year;
  - HVAC measures saving 61 GJ of natural gas per year;
  - Mechanical measures saving 452 GJ of electricity per year;
  - Mechanical measures saving 452 GJ of natural gas per year; and
  - Average functional life of measures is 13 years.

Energy Efficiency Education for Staff

Key assumption:

- Program results in a 4% improvement in the overall energy efficiency of City buildings. This level of energy savings is representative of best practice behavioural change programs for ICI buildings across North American. The energy savings are a result of a range of behavioural change actions that impact energy consumption across HVAC, lighting, water heating, auxiliary equipment and motors.

PACE (Residential & Commercial Buildings)

Key assumptions:

- Regarding ICI buildings, the provision of PACE results in (% are rounded):
    - +0.4% and +3.8% of new ICI floor space in 2020 and 2030, respectively, achieving energy intensities 25% above the prevailing building code. Improvement applies to all end-uses.
    - +0.4% and +4.3% of new ICI floor space in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
    - +0.5% and +3.9% of existing ICI floor space in 2020 and 2030, respectively, install measures that improve building energy efficiency by 25% (both electricity and natural gas end uses).
    - +0.4% and +4.0% of existing ICI floor space in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
- Natural gas and electricity energy saving measures for ICI buildings have average functional lifes of 20 years and 14 years, respectively. PV solar units have a functional life of 30 years.
- Regarding residential buildings, the provision of PACE results in:
    - +0.2% and +2.9% of new homes in 2020 and 2030, respectively, achieving energy intensities 15% above the prevailing building code. Improvement applies to all end-uses.
    - +0.3% and +3.4% of new homes in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
    - +0.5% and +3.2% of existing homes in 2020 and 2030, respectively, install measures that improve building energy efficiency by 24% (both electricity and natural gas end uses).
    - +0.2% and +3.3% of existing homes in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
- Natural gas and electricity energy saving measures for homes have average functional lifes of 21 years and 15 years, respectively. PV solar units have a functional life of 30 years.
- Residential PACE uptake is based on the following sources: (City of Toronto, 2019) and (City of Ottawa, 2016).
- Commercial PACE uptake is based on the following source: (Connecticut Green Bank, 2017).

- The purchase price and installation costs of all energy saving measures and renewable energy technologies for the residential and ICI sectors are built into CI-EAT. Relevant program administration and incentive costs (if offered) are also built into CI-EAT.

Promote Existing Energy Efficiency Programs

Key assumptions:

- Regarding ICI buildings, the promotion of existing program offerings results in (% are rounded):
    - +0.2% and +2.4% of new ICI floor space in 2020 and 2030, respectively, achieving energy intensities 25% above the prevailing building code. Improvement applies to all end-uses.
    - +0.5% and +1.0% of new ICI floor space in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
    - +0.3% and +2.5% of existing ICI floor space in 2020 and 2030, respectively, install measures that improve building energy efficiency by 25% (both electricity and natural gas end uses).
    - +0.2% and +0.5% of existing ICI floor space in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
- Natural gas and electricity energy saving measures for ICI buildings have average functional lifes of 20 years and 14 years, respectively. PV solar units have a functional life of 30 years.
- Regarding residential buildings, the promotion of existing program offerings results in:
    - +0.2% and +2.5% of new homes in 2020 and 2030, respectively, achieving energy intensities 15% above the prevailing building code. Improvement applies to all end-uses.
    - +0.3% and +3.3% of new homes in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
    - +0.5% and +3.2% of existing homes in 2020 and 2030, respectively, install measures that improve building energy efficiency by 24% (both electricity and natural gas end uses).
    - +0.1% and +0.3% of existing homes in 2020 and 2030, respectively, installing solar PV that meets 50% of baseline electricity demand.
- Natural gas and electricity energy saving measures for homes have average functional lifes of 21 years and 15 years, respectively. PV solar units have a functional life of 30 years.
- The purchase price and installation costs of all energy saving measures and renewable energy technologies for the residential and ICI sectors are built into CI-EAT. Relevant program administration and incentive costs (if offered) are also built into CI-EAT.

Transportation

City to Buy Best-in-Class New Fleet

Key assumptions:

- Action applied to 70 individual light-duty City of Leduc fleet vehicles; each with its own estimate of base year fuel economy and annual distance travelled.
- When vehicle reaches 250,000 km it is removed from the fleet and a "best-in-class" (BIC) replacement vehicle is assumed to be purchased, of which there are 6 different vehicle classes.
- Vehicle specific fuel savings are given by historical average fuel economy less BIC fuel economy. Estimated fuel savings assumes that each new BIC vehicles has same annual distance travelled (over time) as the original replaced vehicle.
- Fuel economies for BIC replacement vehicles obtained from fueleconomy.gov.
- The incremental cost of a BIC vehicle is assumed to be zero; a review of vehicle purchase prices revealed that cost differences between a replacement "average" vs "BIC" vehicle is sometimes positive, sometimes negative, and often very similar.

Promote Active Transport

Key assumption:

- Annual vehicle-kilometres travelled (VKT) by light-duty vehicles is reduced by 7% relative to baseline projections by 2030; rising linearly from 0% in the year prior to first year of program to 7% by 2030 (based on BC Climate Action Toolkit, 2018).

EV Charging Stations in New Developments

Key assumptions:

- Purchase and installation costs: Level 2 home charging ($1,300-$2,700, used $2,000); Level 3 50kW, 440V public station ($65,000-$250,000, used $110,000). Costs of charging stations based on interviews with Community Energy Association and from 2013. NYC Taxi and Limousine Commission, Take Charge: A Roadmap to Electric New York City Taxis, December. http://www.nyc.gov/html/tlc/downloads/pdf/electric_taxi_task_force_report_20131231.pdf
- Electric vehicles (EVs) share of total new vehicles sales in 2015 based on data for Edmonton from Fleet Carma Total EV Fleet in AB 2016, IHS Markit, and Stats Canada total vehicle sales for Alberta.

- Reference Case projections of EVs share of new vehicle purchases and the split between broad types (HEVs, PHEVs and BEVs) from Axsen et al, 2015, Electrifying Vehicles: Insights from the Canadian Plug-in Electric Vehicle Study, SFU
- Policy induces installation of two Level 2 charging stations which results in a 2.9% increase in the Reference Case penetration rate of EVs in the new sales market.
- Fuel economy assumptions for EVs: Layzell and Straatman, 2016, The Potential Impact of Electric Vehicles on Alberta's Energy Systems, CESAR Scenarios; Axsen et al, 2015, Electrifying Vehicles: Insights from the Canadian Plug-in Electric Vehicle Study, SFU.
- EV maintenance costs 2013. EPRI, Total Cost of Ownership for Current Plug-in Electric Hybrids, Palo Alto, CA.
- Learning effects and cost projections: McKinsey, 2010, A Portfolio of Power-trains for Europe: A Fact-based Analysis; IEA, 2013, Global EV Outlook - Understanding the EV Landscape to 2020, IEA, Paris; Bloomberg New Energy Finance, 2016, Nykist and Nilsson, 2015, Rapidly Falling Costs of Battery Packs for Electric Vehicles, Nature Climate Change, 5, 329-332; Wolfram and Lutsey, 2016, Electric Vehicles: Literature Review of Technology Costs and Carbon Emissions, ICCT Working Paper 2016-14.

Public Electric Vehicle Charging Stations

Key assumptions:

- As per *EV Charging Station in New Developments*
- Action involves purchase and installation of seven Level-2 and one Level-3 charging stations, for a total of eight. This results in a 11.6% increase in the Reference Case penetration rate of EVs in the new sales market.

Transit

Enhanced Commuter Transit

Key assumptions:

- Buses would run all day long on weekdays between Edmonton and Leduc adding 10 hours per day or 210 per month (based on 21-day service month) or 2,520 hours annually.
- Under the Reference Case, boardings per capita (based on the most recent City of Leduc ridership data) remains constant over time, but as the population grows over time, so does the total ridership.
- In the first year of the action, boardings are assumed to increase by about 37,800 (or 47%); increasing at about 2.5% per year thereafter in line with projected population growth.

- For every 100 new boardings, it is assumed that 65 passenger trips (covering the same distance as the bus) in private light-duty vehicles are avoided (based on vehicle occupancy rates in Edmonton), saving new transit riders the difference between bus fares and the costs of operating their vehicle. Additional fare revenues received by the City represents an equivalent financial transfer from individuals to the City (and wash out in the cost-benefit analysis).
- Emission (energy) savings are given by the difference between those arising from additional bus services and avoided trips in light-duty vehicles.
- The additional operating & maintenance costs incurred by the City as service provision increases are based on Leduc's 2017 transit expenditures. Fares are assumed to remain constant in real terms over time.

U-Pass Marketing

Key assumptions:

- Assumes a 10% increase in Reference Case boardings per capita with no changes in transit availability (route distance or frequency of service). Hence, there is no change in bus operating and maintenance costs; only an increase in fare revenue to offset against the cost of the policy.
- Calculations mirror those for the action: *Enhanced Commuter Transit*.

Enhance Transit Marketing

Key assumptions:

- Assumes a 12% increase in Reference Case boardings per capita on Routes 1, 2, 4 and 10 only, with no changes in transit availability (route distance or frequency of service). Hence, there is no change in bus operating and maintenance costs; only an increase in fare revenue to offset against the cost of policy.
- Calculations mirror those for the action: *Enhanced Commuter Transit*.

Electric Commuter Bus

Key assumptions:

- Purchase price of a conventional commuter bus is $600,000 (City of Edmonton, 2016).
- Purchase price of an equivalent electric commuter bus is $850,000 (from correspondence with the City of Spruce Grove).
- Purchase and installation cost of electric charging stations is $18,750 (City of Edmonton, 2016).

- Maintenance costs of each bus are $0.36 per VKT (for conventional bus) and $0.25 per VKT (for electric bus), resulting in maintenance cost savings for the electric commuter bus.
- The functional life of both types of commuter bus is 17 years.
- The electric commuter bus displaces a new conventional commuter bus on the same route (Route 1) analysed for the action: *Enhanced Commuter Transit* (under the Reference Case with no change in service provision or ridership).

Land-use

Infill (High Density Development)

Key assumptions:

- Sites for future development currently house about 10,460 people in 3,667 dwellings (approximately 6.5% are single family; 7.5% are duplex, townhouse or 4-plex; and 86.0% are multi-family).
- Overall, 1,211 people require new housing over the period 2020-2030.
- Under the baseline scenario, these people are housed in 62 single family; 63 duplex, townhouse or 4-plex; and 673 multi-family (density of new dwellings is about 40).
- Under the higher density (infill) scenario, these people are housed in 6 single family; 48 duplex, townhouse or 4-plex; and 785 multi-family (density of new dwellings is about 65).
- New development (dwellings added per year) to house these 1,211 people takes places evenly over period 2020-2030.
- Average size of a new single-family dwelling is 188 square metres.
- Average construction cost of a new single-family dwelling is $2,270 per square metre. All construction and servicing costs from Cuthbert Smith Group (2018).
- Average size of a new duplex, townhouse or 4-plex dwelling is 147 square metres.
- Average construction cost of a new duplex, townhouse or 4-plex dwelling is $1,540 per square metre.
- Average size of a new multi-family dwelling is 108 square metres.
- Average construction cost of a multi-family dwelling is $2,955 per square metre.
- Average function life of residential dwelling is 50 years.
- The total construction costs (2020-2030) for the higher density (infill) scenario is about $263.9 million; the total construction costs (2020-2030) for the baseline scenario is about $255.4 million.

- Relative to the baseline scenario, about 136 lots are not developed under the higher density (infill) scenario.
- Lot serving costs are about $74,500 per lot.
- Building energy savings are based on the difference between total annual electricity & natural gas consumption from all dwellings constructed between 2020-2030 under the baseline scenario and higher density (infill) scenario, over the function life of those dwellings.
- Changes in private light-duty vehicle use (and resultant savings in transport fuels) are based on an elasticity of 9.8% (i.e., a 10% increase in housing density will result in a 0.98% reduction in VKT).

Mixed Use Development

Key assumptions:

- Same baseline scenario as for higher density (infill) policy action.
- Same cost assumptions and source as per higher density (infill) policy action (residential construction costs are about $23.2 million per year over 2020-2030).
- Servicing costs for commercial lots are about $28,900 per lot.
- Residential construction costs are assumed to be about 1.24 times more than non-residential construction costs (based on Cuthbert Smith Group, 2018).
- Mixed use policy scenario assumes 80% of the same area that would have been developed under the baseline scenario remains residential as per the baseline scenario, while the other 20% is now non-residential.
- Residential (non-residential) construction costs are assumed to be 7.8% (1.1%) lower with mixed-used development than they would be otherwise, saving about $1.5 million annually.
- 16 additional lots are assumed to be developed annually 2020-2030, but servicing costs are about 9.2% lower with mixed use development, saving about $98,000 annually.
- With mixed use development, about 3.3% of private light-duty vehicle trips of residents are reduced by about 21.6%.

Main sources for both infill and mixed-use development are: Duranton and Turner, 2017; Brownstone and Golob, 2009; Smart Growth America, 2013; and Duranton and Turner, 2012.

Promote Secondary Suites

Key assumptions:

- Construction costs for secondary suites are $30,000 (mid-point of $25,000 and $35,000) (Alberta Municipal Affairs, 2016).
- It is assumed that each year 0.26% of projected single-family dwellings (2020-2030) that do not have a secondary suite in year t-1, will add a suite in year t. In 2030, for example, 29 additional secondary suites are projected to be constructed bringing the total of new suites over the course of the policy to 217.

Tree Planting

Key assumptions:

- 600 seedlings are planted annually over the period 2020-2030.
- 110 new trees are planted annually over the period 2020-2030.
- 120 old trees are replaced annually over the period 2020-2030.
- Seedlings take 15 years to mature.
- At maturity, the diameter of trees is 16.3 cm (average for City of Toronto).
- Average tree life is 75 years (range for Edmonton is 30 to over 150 years, though many species have lifes of 75 years).
- Cost to purchase, plant and maintain seedlings and trees obtained from the City of Leduc ($600 per new or replacement tree; $10 per seedling).

Waste

ICI Waste Reduction Education

Key assumptions:

- Leduc waste generation is estimated to grow at 3.4% per year based on historic average over the period 1988-2017. The organics component of the waste stream averages 28%.
- The policy results in +10% incremental ICI organics diversion.
- Fee ($74 per tonne) for organics processing and transportation ($30 per tonne) was obtained from City of Leduc.

- Costs of conventional disposal avoided based on lifecycle cost of new landfill site at $135 per tonne (Khan, 2015) plus the levelized cost of garbage baling (see below).
- See "Leduc costs" for capital and operating costs of program.

Differential Tippage Fees

Key assumptions:

- Policy involves a 5% increase in the current tippage rate for commercial waste, coupled with a 5% decrease in the current tippage rate for organic commercial waste.
- Policy results in a 5% increase in commercial organics diversion (Ontario Waste Management Association, 2014).
- Fee ($74 per tonne) for organics processing and transportation ($30 per tonne).
- Costs of conventional disposal avoided based on lifecycle cost of new landfill site at $135 per tonne (Khan, 2015) plus the levelized cost of garbage baling (see below).
- See "Leduc costs" for capital and operating costs of program.

Mandate Separate Bin

Key assumptions:

- Assumed that *ICI Waste Reduction Education* and *Differential Tippage Fees* evolve into a requirement to have separate bins for commercial organic waste.
- Policy results in a 10% increase in commercial organics diversion for waste that currently does not go to the LDWMF (offsite commercial organics).
- Fee ($74 per tonne) for organics processing and transportation ($30 per tonne).
- Costs of conventional disposal avoided based on lifecycle cost of new landfill site at $135 per tonne (Khan, 2015) plus the levelized cost of garbage baling (see below).
- See "Leduc costs" for capital and operating costs of program.

Garbage Baling

Key assumptions:

- Assumes a 50% reduction in methane releases from landfilled waste. This is based on only reference (Baldasano, 2003) and therefore is highly uncertain.
- $3,000,0000 capital cost to the LDRMWF; $200,000 annual operation costs to the LDRMWF. One-third of these costs is assumed attributable to Leduc.
- No information was available for increases in energy use, GHG emissions and associated costs for the baling process; hence, the emission savings and costs are overstated and understated, respectively.
- The estimated levelized cost (for full cost recovery) per tonne of 'baled' waste is $5.80, assuming a functional life of 20 years.

Organics Processing Facility

Key assumptions:

- Results in +10% residential organics, +10% commercial organics and +10% offsite commercial organics diversion.
- $9,000,0000 capital cost to the LDRMWF; $100,000 annual operation costs to the LDRMWF. One-third of these costs is assumed attributable to Leduc.
- The estimated levelized cost (for full cost recovery) per tonne of 'processed' organic waste is about $63, assuming a functional life of 35 years.
- Costs of conventional disposal avoided based on lifecycle cost of new landfill site at $135 per tonne (Khan, 2015) plus the levelized cost of garbage baling (see above).
- Cost of conventional organics processing and transportation avoided: fee ($74 per tonne) for organics processing and transportation ($30 per tonne).
- Driving distance reduced per load assumed to be half the distance to Penhold due to half of processing occurring at locations close to Leduc and half being processed at Penhold.

Variable Size Cart Program

Key assumptions:

- Policy results in 21% increase in residential organics diversion rate, based on average results from seven different programs (Kelleher, 2005).

- Fee ($74 per tonne) for organics processing and transportation ($30 per tonne).
- Costs of conventional disposal avoided based on lifecycle cost of new landfill site at $135 per tonne (Khan, 2015) plus the levelized cost of garbage baling (see below).
- See "Leduc costs" for capital and operating costs of program.

Biocover for Landfill

Key assumptions:

- Biocover converts methane to carbon dioxide for all relevant Leduc waste between 2007 and 2018.
- GHG emissions not adjusted upwards to account for an imperfect methane oxidation efficiency. Initial tests at LDRWMF indicate a methane oxidation efficiency of 71-97%; therefore, emission savings from Biocover is likely an over estimate.
- See "Leduc costs" for capital and operation costs of biocover.

Summary of Costs and Benefits

Exhibit 11 provides a summary of (undiscounted) costs and benefits that accrue to the City of Leduc, for select GHG mitigation actions; Exhibit 12 provides similar information for other stakeholders, such Leduc residents and businesses.

Exhibit 11 City of Leduc: Costs and Benefits from Select GHG Reduction Actions (2018 prices)

Emission Source	Mitigation Actions	Total Expenditures (2020-2030)	Notes	Total Financial Benefits (Lifetime)	Notes
Buildings	Energy Efficiency and Renewable Standard for City Buildings	$ 297,000	Purchase and installation of energy saving and renewable energy measures, net of incentives	$ 1,278,000	Avoided energy costs (undiscounted)
	Energy Efficiency Education for City Staff	$ 40,000	Staff & material costs	$ 231,000	Avoided energy costs (undiscounted)
	Promote Provincial Energy Efficiency Programs	$ 105,000	Staff, material & publicity costs	$ -	None
Energy Supply	New Solar on Existing City Buildings	$ 728,000	Purchase and installation of PV system, based on costs of existing systems	$ 914,000	Avoided energy costs (undiscounted)
Land Use	Promote Secondary Suites	$ 10,000	Staff, material & publicity costs	$ -	Study shows a net fiscal benefit for Cities, but this was not quantified due to insufficient data
Transit	Promote Active Transport, Enhance Transit & U-Pass Marketing	$ 50,000	Staff, material & publicity costs (frequency or extent of transit service does not change - hence, no extra cost)	$ 503,000	Increased fare revenue (transfer from transit users)
	Enhance Commuter Transit	$ 1,600,000	New commuter bus, plus additional operating costs (maintenance, fuel and staff)	$ 2,553,000	Increased fare revenue (transfer from transit users)
	Electric Commuter Bus	$ 269,000	Electric bus and charging station	$ 429,000	Operational cost saving (fuel, maintenance) from running a new electric bus vis-à-vis a new conventional bus
Transport	Electric Vehicle Charging Stations	$ 122,000	Purchase & installation of public electric charging stations; 1 fast and 7 normal (public pays for electricity)	$ -	None
Waste	Commercial/Business Waste Reduction Education and Future Program Development	$ 60,000	Staff, material & publicity costs	$ -	None (though operational cost savings)
	Variable size cart program	$ 400,000	New carts and staffing costs	$ -	None (though operational cost savings)
		$ 3,681,000		**$ 5,908,000**	

Exhibit 12 Leduc Residents, Businesses, and Others: Costs and Benefits from Select GHG Reduction Actions (2018 prices)

Emission Source	Mitigation Actions	Total Expenditures (2020-2030)	Notes	Total Financial Benefits (Lifetime)	Notes
Buildings	Energy Efficiency and Renewable Standard for City Buildings	$ 59,000	Incentive payment from -- e.g., EEA, MCCAC - plus program deliver costs	$ -	None
	Energy Efficiency Education for City Staff	$ -	None	$ -	None
	Promote Provincial Energy Efficiency Programs	$ 1,135,000	Purchase and installation of energy saving measures, plus program delivery costs	$ 1,076,000	Avoided energy costs (undiscounted)
Energy Supply	New Solar on Existing City Buildings	$ -	None	$ -	None
Land Use	Promote Secondary Suites	$ 111,000	Net cost of home owners developing secondary suites	$ 487,000	Avoided energy costs from running a smaller home plus avoided fuel costs from using car less (undiscounted)
Transit	Promote Active Transport, Enhance Transit & U-Pass Marketing	$ 503,000	Fare cost of public transit (transfer to City)	$ 11,385,000	Avoided fuel costs from using car less (undiscounted)
	Enhance Commuter Transit	$ 280,000	Fare cost of public transit (transfer to City)	$ 4,436,000	Avoided fuel costs from using car less (undiscounted)
	Electric Commuter Bus	$ -	None	$ -	None
Transport	Electric Vehicle Charging Stations	$ 252,000	Incremental cost of purchasing PHEVs and BEVs in response to the presence of public charging stations	$ 611,000	Net fuel cost savings from using car less (undiscounted) (gasoline + diesel - additional electricity)
Waste	Commercial/Business Waste Reduction Education and Future Program Development	-$ 150,000	Net operational cost saving to LDRWMF as new landfill costs exceed organics processing lifecycle costs	$ -	None (though operational cost savings)
	Variable size cart program	-$ 104,000	Net operational cost saving to LDRWMF as new landfill costs exceed organics processing lifecycle costs	$ -	None (though operational cost savings)
		$ 2,086,000		**$ 17,995,000**	

Notes: EEA is Energy Efficiency Alberta; MCCAC is the Municipal Climate Change Action Centre; PHEVs are plug-in hybrid electric vehicles; BEVs are battery only electric vehicles; and LDRWMF is the Leduc and District Waste Management Facility.

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C APPENDIX

What We Heard Report

Let's talk... Our Climate Solutions

February 2019

1 Executive Summary

Development of Leduc's plan took into account the views of residents, business and community representatives, stakeholder groups, civic staff and City Council, and the Leduc Environmental Advisory Board (LEAB). LEAB will assist the planning team at key points in the planning process and fulfil the role of community advisor.

The following steps ensured a transparent process captured ideas and test recommendations before City Council approves the plan.

1. ENGAGED the Leduc community for plan ideas.
2. COMPILE preliminary recommendations.
3. PRESENT preliminary recommendations to the Leduc community for further input.
4. DEVELOP final recommendations and present them to City Council for approval.

The City of Leduc engaged the public and key stakeholders to gather their perspectives and input on their GHG reduction plan. Engagement activities included:

- Communication through a paid print and digital advertising,
- A dedicated section on the Leduc website and a brochure,
- Written feedback through an engagement hub and online survey,
- Education and input through a Climate Mitigation Express workshop,
- Ongoing input through the Leduc Environmental Advisory Board (LEAB) GHG Reduction Sub-Committee,
- Stakeholder engagement workshop, and
- A public open house.

1.1 Engagement Overview by the Numbers

Between April 1st and June 5th 2018:

- Our Climate Solutions webpage received 492 views.
- Three Facebook survey promotion posts by the City of Leduc in April and May collectively reached almost 4,000 people and received 11 likes, 5 shares and 71 post clicks.
- Two Facebook paid advertisements collectively appeared over 95,000 times and received 398 total clicks.
- Leduc's online survey had 247 people respond.
- The engagement hub had 94 stickies posted.
- A total of 27 stakeholders from 18 different organizations were invited to attend the stakeholder workshop with 12 stakeholders attending.

In the fall:

- Approximately 40 people attended the open house to present the draft GHG reduction plan.

1.2 What We Heard – Survey

Based on the 200+ survey responses received, the top four benefits of a GHG reduction plan include:

- Improved health and well-being (78% rated this result as "more important", that is, 4 or better out of a scale of 8),
- Lowering energy bills (70% rated more important),
- Lower GHG emissions (65% rated more important), and
- Walkable and bicycle-friendly neighbourhoods (51% rated more important).

All proposed City of Leduc GHG reduction actions are supported by the majority of those who responded. The top six City of Leduc GHG reduction actions include:

- Planting trees and preserving natural areas (93% of participants agree),
- Encouraging of composting and recycling by residents and businesses (over 89-86% of participants agree),
- Improving energy efficiency (83% agree),
- Neighbourhood planning to encourage walking (75% agree),
- More walking and biking paths (71% agree), and
- Increased public transportation (67% agree).

All resident and business GHG reduction actions listed are supported by the majority of those who responded. The top six resident and business GHG reduction actions include:

- Planting trees and preserving natural areas (90% agree),
- Composting and recycling (87% agree),
- Improving energy efficiency (85% agree),
- Biking or walking more (71% agree),
- Carpooling (63% agree), and
- Using renewable energy (54% agree).

1.3 What We Heard – Stakeholder Workshop

Overall the feedback from the stakeholder workshop was positive as they supported the majority of GHG reduction actions proposed. The following additional action items were suggested:

- A waste management program that collects organics from businesses,
- Education on the benefits of walk and transit-oriented development,
- Enhance transit service so it accessible for Leduc, Leduc Industrial, Nisku and Edmonton,

- Continue to enhance and plan for multi-use trails,
- Pursue anti-idling through City leadership, bylaws and signage,
- Consider solar carports, and
- Consider the introduction of biodigesters.

1.4 Public Open House

Support of the GHG reduction plan and a desire to take actions further emanated from input at the public open house. Through the public open house evaluation forms and in conversation with the facilitators, no opposition to the GHG reduction action plan was expressed. The majority of comments wanted the action plan to go further in reducing GHG emissions. Based on the evaluation forms, support for the 9 % GHG reduction target was 83% with the remaining responses supporting the 5% reduction target.

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2 Engagement Approach

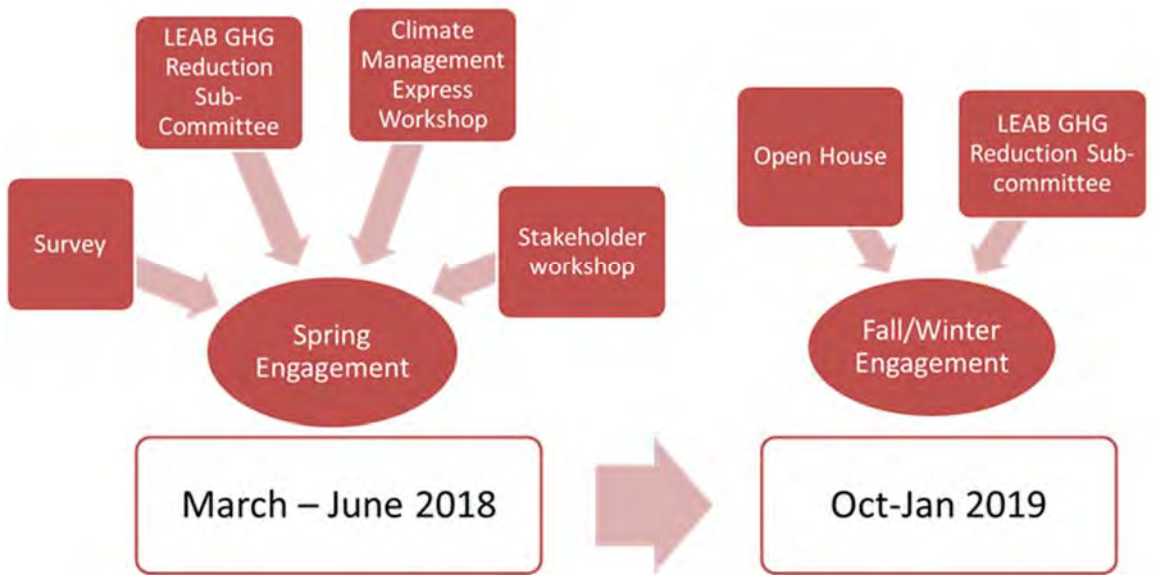
The City of Leduc created a local action plan to reduce greenhouse gas (GHG) emissions to guide their activities towards meeting a community and a corporate reduction target. Throughout the process, the City engaged with the public and key stakeholders to get their perspectives and input on GHG reduction actions to be considered for the plan.

Public and stakeholder engagement was planned in two stages (see Exhibit 1 below):

1. **Spring 2018 engagement** – the objectives are to inform public and stakeholders of the GHG planning process, educate on climate change, understand perspectives on high-level actions, gather GHG reduction action ideas, and develop a vision and principles to guide the planning process; and
2. **Fall/Winter 2018/2019 engagement** – this engagement will occur when the GHG reduction scenario modelling, a draft target, and a draft plan are complete. The objectives are to gather public and stakeholder perspectives on a draft GHG reduction plan and targets and educate on climate change.

The initial spring engagement is now completed.

Exhibit 1 Summary of Methods to Obtain Public and Stakeholder Input for Leduc GHG Reduction Plan



2.1 Spring Public Outreach and Engagement

The spring outreach to stakeholders and the public included:

- Website, Brochure, and Engagement Hub

A designated webpage on the City of Leduc website (Leduc.ca/ourclimatesolutions) provides an electronic 'home' for information about the GHG reduction planning process, engagement opportunities, education on climate change, and related materials.

An engagement hub consisting of pull up displays, display boards and a take-away brochure provide a non-electronic outreach method to present education on climate change. The booth and brochures were displayed at the Business Expo April 13 and 14th. When not at an event, the booth was rotated between the library, the Civic Centre and the Leduc recreation centre (LRC). The booth has two pull-up display panels on City of Leduc GHG reduction accomplishments (that will be used beyond the planning process) and less permanent display boards that educate on climate change, the GHG reduction planning process and provide an opportunity for written input on stickie notes.

- Online Survey

An online survey was released April 10th to June 1st gauging citizen's perspectives on perceived benefits, and preferred GHG reduction actions. The survey was promoted through emails to specific stakeholders, social media posts, social media advertising, LED boards (at the library, the LRC, and the Civic Centre), a press release, hand-outs at the displays, and a half-page and a full-page ad. Note: the advertisements also promoted the benefits of GHG reduction projects and the GHG reduction planning process timeline. Six Google Home Minis were offered as a prize draw for responding to the survey.

- Public Workshop: Climate Management Express

A customized Climate Management Express workshop was delivered April 25, 2018, as an engagement mechanism for interested LEAB committee and community members. Ideas generated at this public event fed directly into the development of initial action options presented at the stakeholder workshop as well as the vision and principles for the plan.

- LEAB GHG Reduction Sub-Committee

A six person GHG reduction sub-committee of the Leduc Environmental Advisory Board (LEAB) was formed including City staff and an elected official. The list of the members can be found on page 30. A GHG reduction committee can be an effective means to garner community support,

feedback, and substantive input on a GHG reduction plan, target, and to move implementation actions forward post approval. The sub-committee has an established terms of reference and are mandated to report back to LEAB.

2.2 Stakeholder Engagement Sessions

A 2.5-hour stakeholder workshop was held at the LRC. The stakeholder engagement workshop had the following objectives:

- Create an opportunity for direct stakeholder input and feedback about the initial mitigation options put forward by the City of Leduc and consulting team,
- Make connections to gather information on feasibility, and cost of various action options,
- Outline the process of evaluating options for the plan,
- Increase awareness amongst area stakeholders about the GHG reduction initiative and action plan development, and
- Discuss the importance of creating a GHG inventory as a precursor to a GHG reduction plan and the importance of establishing a baseline.

A presentation on the importance of the GHG planning process and an outline of plan development was followed by group discussion focused on any missing GHG reduction action options, related concerns, and identification of the action options for further consideration.

2.3 Council and Staff Engagement

Throughout the project, council has and will be presented with information on the GHG reduction planning and engagement process along with results on public and stakeholder perspectives. A presentation on the engagement plan and the GHG reduction planning process was given to council at a Committee of the Whole (CoW) meeting in April, 2018. A CoW presentation on proposed GHG reduction targets and related modelling will be provided in October, 2018. Finally, Leduc's GHG reduction plan will be presented to council for approval in April, 2019.

Staff input has and will be an integral part of the plan development. Involving staff is essential to ensure the recommended actions in the GHG reduction plan align with existing and future priorities; it also provides an opportunity for staff knowledge growth on potential GHG emission reduction opportunities. A staff workshop was held May 14, 2018, prior to the stakeholder engagement workshop to vet the list of potential GHG reduction actions and add to the list where actions were missing. The following departments participated: planning, public services, facilities, engineering, and transit. Further staff input was gathered through follow-up interviews and emails, to assist with developing the plan implementation timeline and GHG reduction scenarios to be used for GHG reduction target setting, Staff will also have the opportunity to review the draft targets and plan to ensure the language and content reflects the overall vision and goals for their department.

2.4 Public Open House

The City of Leduc held a public open house on January 23rd. All stakeholders, LEAB members, City staff, mayor and council, and citizen who expressed interest received direct invitation. The objective was to present the GHG reduction actions, GHG reduction scenarios, and related targets to interested members of the public.

Fourteen display boards and two pull-up panels presented the following topics:

- Climate change 101,
- Our GHG reduction planning, modelling and engagement process
- Leduc's GHG inventory summary,
- GHG actions according to sector (buildings, energy supply, transit, transportation, land use and waste) with information on lifetime GHG reductions, start date, and new resources required,
- Summary of three potential targets and what actions are included in each,
- The benefits coming out of the plan, and
- A summary of new program costs and the potential tax implications.

This display board information was later circulated by email to public and stakeholders electronically and was posted on the website.

3 Engagement Overview by the Numbers

3.1 Website

Between April 1st and June 5th 2018, Our Climate Solutions webpage received 492 pageviews with 369 unique pageviews. Viewers spent an average of 99 seconds on the page. The subpage most frequented was "engagement opportunities" (154 hits), followed by "about the project" (86 hits), and "project information library" (49 hits). See further details in Exhibit 2 below.

Exhibit 2 Our Climate Solutions Website Views, April 1st- June 5th, 2018

Page	Pageviews	Unique Pageviews	Avg. Time on Page (secs)
ourclimatesolutions	492	369	99
about-project	86	62	132
project-information-library	49	17	57
engagement-opportunities	154	138	64

3.2 Social Media

Three Facebook survey promotion posts (see example in Exhibit 3 below) by the City of Leduc in April and May 2018, collectively reached 3,945 people and received 11 likes, 5 shares and 71 post clicks.

Exhibit 3 Example Facebook Post to Promote the Survey

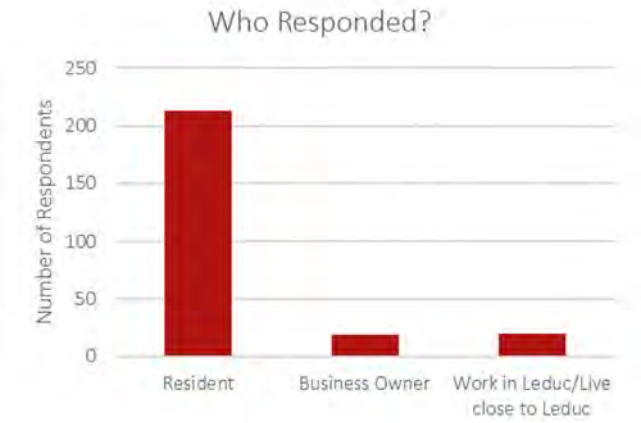
Two Facebook paid advertisements collectively reached almost 36,000 devices – appearing almost 95,000 times. The advertisements received 373 unique clicks and 398 total clicks.

3.3 Online Survey

Leduc's online survey had over 247 people respond. Over 200 respondents (89%) are residents, 19 business owners (8%), and 20 non-residents (8%) who work, shop or in other ways spend time in Leduc (see Exhibit 4 below).[1]

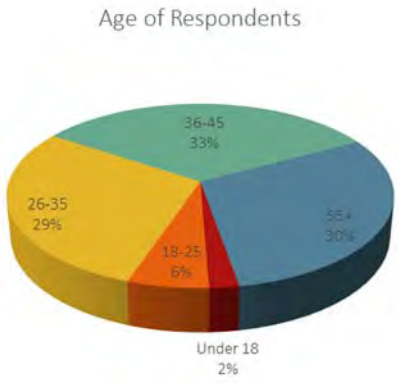
[1] These categories overlap therefore the percentages add up to more than 100%.

Exhibit 4 Respondents Relationship with Leduc (Resident/Business Owner/Other)



In general, younger ages were underrepresented in the survey results. Over 90% of respondents are over the age of 26 and only 8% of respondents are under 25. Most of the respondents are between the ages of 36 and 45 (see Exhibit 5 below).

Exhibit 5 Age Distribution of Respondents



3.4 Engagement Hub

At the engagement hubs in the Civic Centre and the LRC 94 stickies providing feedback were posted on display boards.

Exhibit 6 GHG Reduction Plan Display at the Library and the LRC

3.5 Stakeholder Workshop

A total of 27 stakeholders from 18 different organizations were invited to attend the stakeholder workshop. In the end, 12 stakeholders attended the GHG reduction workshop.

3.6 Public Open House

Approximately 40 people attended the open house to present the draft GHG reduction plan. Of those who attended, fourteen completed an evaluation form.

4 What We Heard

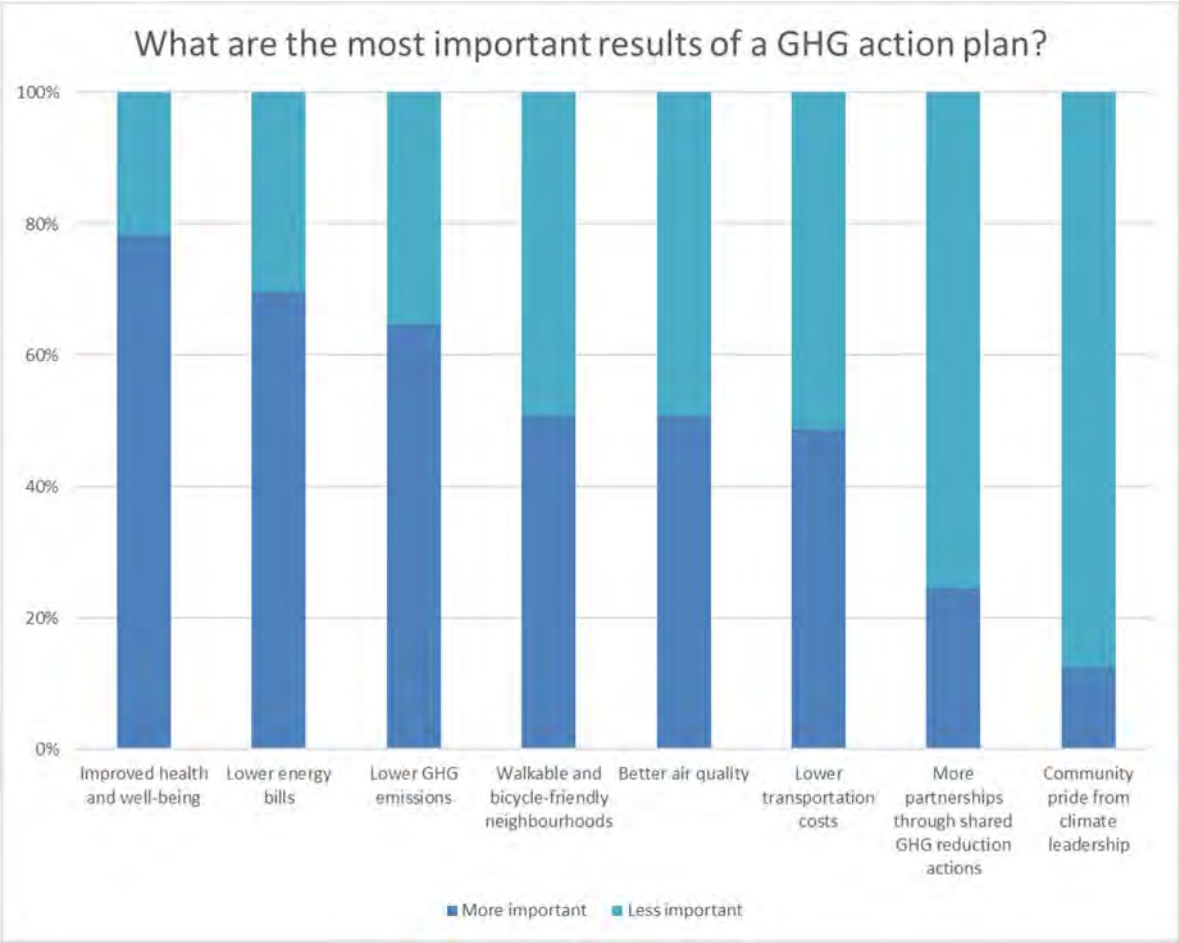
4.1 Survey

4.1.1 Most Important Results of a GHG Action Plan

The benefits of a GHG reduction plan received a positive rating of 1 through 4 (based on a ranking of 1 to 8 - see Exhibit 7 below) by the majority of respondents. The highest ranked outcome is improved health and well-being (78%)[2]. Also, a relatively high level of importance is placed on lowering energy bills (70%) followed by lower GHG emissions (65%). "Walkable and bicycle-friendly neighbourhoods" and "better air quality" and "lower transportation costs" were also rated fairly high (51%, 51%, and 49% respectively). However, "community pride from taking climate leadership" and the "creation of partnerships through shared emission reduction actions" were deemed less important relative to the other results (25% and 12% respectively).

[2] On a scale of 1 to 8, 78% rated this result 4 or better – 1 being the more positive result. See Exhibit 15 for exact rating of each GHG reduction action benefit.

Exhibit 7 Most Important Results of a GHG Action Plan



When asked if there are any other important results, a broad range of topics was raised with no emphasis on any one topic (see Exhibit 8 below). There were 7 mentions of GHG emissions being a non-issue.

Exhibit 8 Most Important Results of a GHG Action Plan - Comments

Theme	Mentions
Non-Issue	7
Waste Management	4
Better Infrastructure	3
Economic Development	3
Air Quality	2
Energy Efficiency	2
Long Term Planning	2
Pollution	2
Sustainable Development	2
Active Transportation	1
Alternative Energy Generation	1
Better Operations	1
Fines	1
Green Spaces	1
Leading The Way	1
Media Bias	1
Mitigation	1
Monitoring	1
New Tech	1
Noise Reduction	1
Urban Planning	1

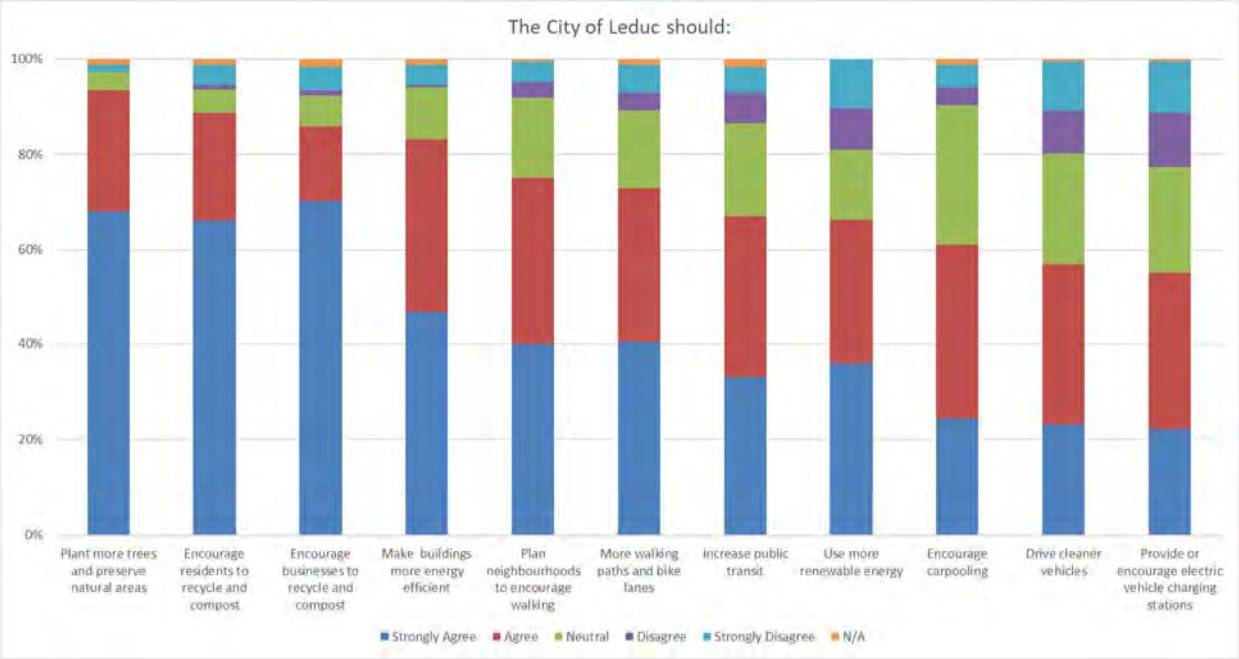
4.1.2 City of Leduc GHG Reduction Actions

All City of Leduc GHG reduction actions listed are supported by the majority of those who responded.[3] "Planting trees and preserving natural areas" is the most popular action item (93% of participants agree). The City's encouragement of composting and recycling by residents and businesses also has strong support (over 89-86%). Improving energy efficiency has the fourth highest level of support (83% agree). The above actions had a low level of disagreement (2-6%) and few neutral opinions (4-6%). Planning to encourage walking and biking (i.e. "plan neighbourhoods to

[3] Agree in this paragraph refers to a combined result of agree and strongly agree.

encourage walking" 75% agree and "more walking paths and bike lanes" 71% agree); those not in agreement are weighted more heavily towards a neutral opinion (16-17%) than in disagreement (8-10%). The majority of respondents agree that the City should increase public transportation and use more renewable energy (67% and 66% respectively). Actions related to transportation, especially those involving different driving habits (i.e. charging electric vehicles, driving cleaner vehicles, and carpooling) have lower but still majority support (55-61%); these actions had a sizeable portion of "neutral" rankings (22-29%) which may indicate that more information is required prior to forming a less neutral opinion.

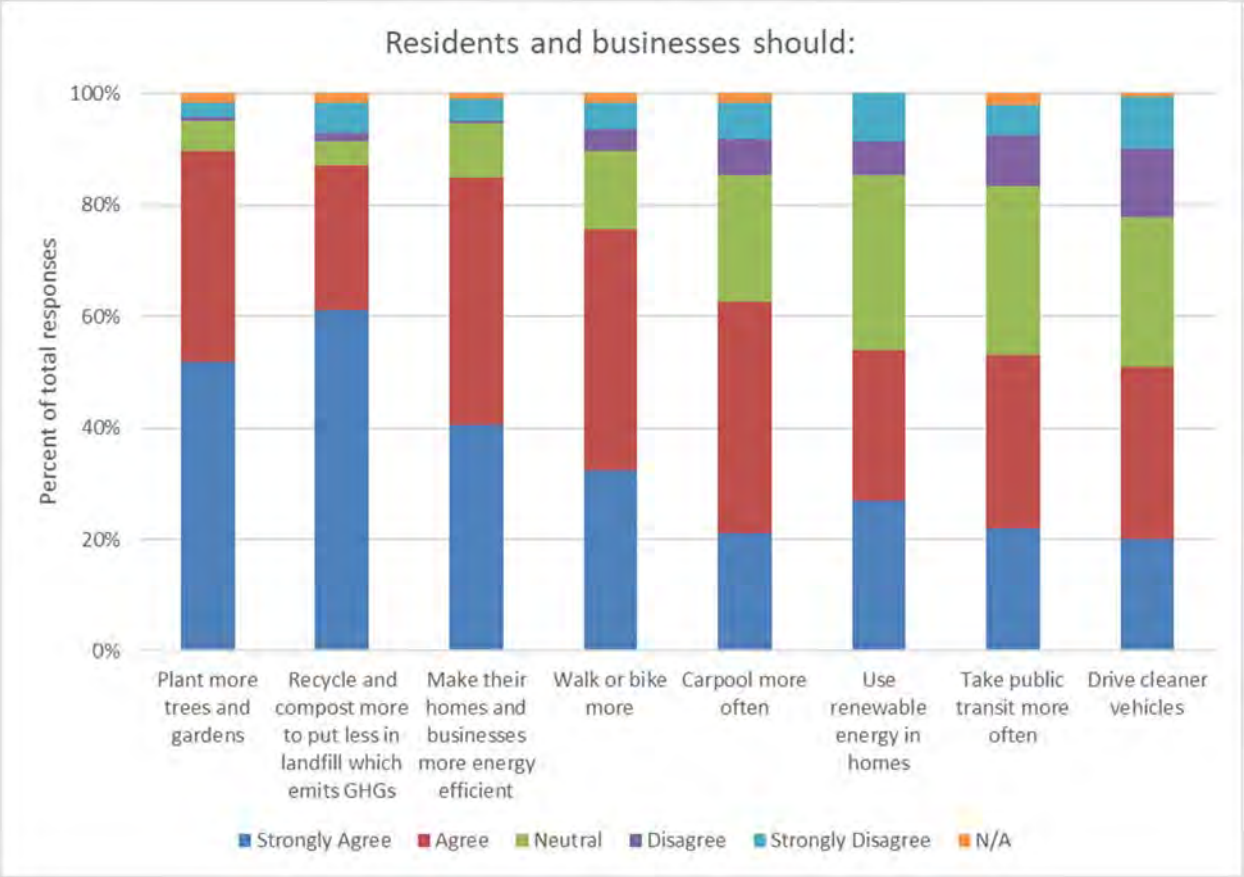
Exhibit 9 Views on City of Leduc GHG Reduction Actions



4.1.3 Resident and Businesses GHG Reduction Actions

All resident and business GHG reduction actions listed are supported by the majority of those who responded.[4] Once again, "Planting trees and preserving natural areas" is the most popular action item (90% of respondents agree). Composting and recycling also have strong support (87% agree). The above actions had a low level of disagreement (3-7%) and few neutral opinions (5-7%). Actions related to transportation, especially those involving different driving habits (i.e. cleaner vehicles, public transit, carpooling), have lower support (63%-51% agree, 23-30% neutral, and 13-22% disagree), although biking or walking more has fairly strong support (71% agree, 14% neutral and 9% disagree). Respondents strongly support improving energy efficiency (85% agree, 10% neutral, 4% disagree), more so than using renewable energy (53% agree, 15% disagree). "Using renewable energy" received a fair number of neutral responses (31% neutral) which may indicate the respondents need more information on costs and the type of supportive actions before having a positive or negative opinion.

Exhibit 10 Views on Leduc Resident and Businesses GHG Reduction Actions



[4] Agree in this paragraph refers to a combined result of agree and strongly agree.

4.2 Combined Written Comments

Written comments from the display board[5] at the engagement hub and the comments section[6] of the online survey are summarized in Exhibit 11 below. Solid waste management was the most frequently cited topic with ideas such as further opportunities for recycling (i.e. glass, Styrofoam and plastic bags) and support for expansion of the existing composting program for businesses. Other popular themes included ways to increase the uptake of walking and biking as well as support for energy efficiency & conservation initiatives.

Costs were a frequent theme in the survey comments with a desire to ensure the benefits were justifying the costs for action items to be pursued in the plan. The challenge of high capital cost as a barrier to emission reductions was raised, as well as some concern around higher taxes. Some desired a common-sense approach with an appropriately long timeline and projects that achieved "good bang for the buck".

Renewable energy was a popular topic but there was also some concern around the cost and toxicity of materials used in renewable energy production. Concern was also expressed about the value in promoting electric vehicles given the GHG intensity of Alberta's electricity grid and ensuring charging stations are "user pays". A small subset of the comments did not see merit in pursuing a GHG reduction plan.

[5] Respondents were asked what the City of Leduc and citizens should do to reduce GHG emissions.

[6] Respondents had opportunity to provide any other comments you feel are important about a Local Action Plan for GHG Emission Reduction.

Exhibit 11 Themes for Written Comments on the Display Board and Comments Section of Survey

Theme	# of Mentions
Waste management	36
Active transportation	21
Energy efficiency & conservation	17
Cost	17
Cost/benefit	4
Capital cost	3
Taxes	2
Renewable energy	12
Reduce consumption	9
Unsupportive of GHG reduction planning	8
EV concerns	7
Air pollution	6
Renewable concerns	6
Smart urban planning	4
Common sense approach	4
Public wellbeing	3
Electric vehicles	3
Financial incentives	3
Public transit	2
Urban agriculture	2
Carpool	2
No idling	2
Education	1
Management	1
Transportation infrastructure	1
Combined heat and power	1
Plant trees	1
Electrify lawn & garden tools	1
Green recognition programs	1
Pesticide free	1
Smart grid	1
HOV lane	1

4.3 Stakeholder Workshop

At the May 15th workshop, stakeholders chose which topic to which they would provide input through small group discussions. Groups reviewed a pre-established list of GHG reduction action items (see page 31 in the Appendix for the full list), identified any missing actions, and chose their top three actions. Stakeholder input is summarized below.

4.3.1 Waste and Wastewater and Education

An organics diversion program for businesses was recommended. The cost to businesses and space constraints at the Leduc and District Regional Waste Management Facility (LDRWMF) should be considered through an assessment. Some participants noted that Leduc should make sure processing technology is viable and cost efficient, and consider whether technological advancements within the period of the GHG reduction plan will allow for installation of a biodigester to generate fuel or electricity.

Stakeholders suggested removing the following action item: "Assess the feasibility, cost and impact of split collection vehicles (collect waste, organics and other recyclables at same time)", as this can lead to inefficient routing (and higher GHG emissions) as one side can fill faster than the other. It also requires fleet replacement which has significant capital cost and environmental impacts.

It was also recommended to remove the following action item: "Request contractors to optimize routing to minimize energy consumption." Routes are already designed to optimize efficiency (e.g. always take right turn) and there is not a lot of room for improvement. Trucks are paid per route which incents the contractor to be efficient (to minimize fuel consumption).

Organics processing at the LDRWMF was supported by stakeholders. However, LDRWMF should consider costs of contamination, operating costs and permitting required by Alberta Environment and Parks (AEP).

When conducting a feasibility study on recycling additional waste streams (i.e. metals, glass, mattresses, Styrofoam) consistency with other municipalities and regional collaboration should be considered. Some barriers may prevent recycling of some materials (i.e. glass may not be recyclable because it is cheaper to use virgin materials).

Given wastewater treatment is managed by the Alberta Capital Region Wastewater Commission and the City of Leduc only manages lift stations, stakeholders wanted to exclude the consideration of wastewater to focus on greater opportunities for emission reductions.

Stakeholders wanted any education program to be accurate, avoid misinformation, and use good/reliable sources. The plan should not rely solely on education, but will need policy/regulation as well.

4.3.2 Urban Planning

Commercial infill (to provide services within walking distances) may be met with opposition as residents may not appreciate change in their neighborhood. Even if commercial amenities are nearby, people may not be willing to use active transportation due to climate and a car centric culture. Prior to changes, it should be determined if the density of the neighborhood will support the commercial business. It is always easier if commercial is included in a neighborhood from the planning stage. Commercial zoning should be included at the outset as it can easily be removed if required.

Education on the benefits of walkability is required as well as political will to implement policies to ensure walkable, transit-oriented communities.

Secondary suites introduce potential concerns around parking, snow storage etc. These may require new operations/maintenance considerations.

Concern was expressed re passive solar design including the compatibility of current electricity servicing standards and tree canopy trade-offs (trees provide shading and protection from heat island effect but may also block passive solar opportunities).

4.3.3 Transportation

Stakeholders identified the following missing action items:

- Buses will now go between Edmonton and Leduc hourly, all day long (as opposed to a few hours in the morning and a few hours in the evening). The City will be needing two new buses for this service and these could be powered by natural gas (or be hybrid buses);
- Car sharing should be examined although it needs to be determined if it is financially viable; and
- Carpooling sites could also be considered.

The following concerns about existing public transit were expressed:

- When using transit, it is not always safe to walk between stops particularly in industrial areas (i.e. in the winter when its dark). Further use of crosswalks could be examined. Stakeholders wanted to create a public survey to be able identify and ultimately to overcome barriers to increased transit use; and

- Better first mile and last mile transportation is needed along with financial incentives and convenience of transit.

The top three transit action items were:

- Enhancing transit service so it accessible for Leduc, Leduc Industrial, Nisku and Edmonton;
- Continue to enhance and plan for multi-use trails; and
- Pursue anti-idling through City leadership, bylaws and signage.

4.3.4 Energy Supply

Stakeholders made the following points around energy supply:

- Consider a bylaw to require all new buildings to have solar (or be solar ready). (Note: there are jurisdictional barriers to this action item).
- City buildings and vehicles should provide leadership and set the example for the wider community.
- Pursue solar hot water only if it makes financial sense.
- Consider wind power (i.e. small wind trees) although one stakeholder cautioned against due to barriers around maintenance and costs.
- Accompany renewable energy with energy conservation. Energy efficiency programs should align with Energy Efficiency Alberta's programs.
- Consider solar carports in Alberta; they are a good match for electric vehicle charging given the GHG intensity of Alberta's electricity grid.
- Support businesses to pursue a closed loop system with waste and energy (i.e. the introduction of biodigesters).
- Use a staged approach to implementation and keep in mind technological advancements that are likely to occur within the next 10 years.

4.3.5 Buildings

Stakeholders had strong support for the following corporate GHG reduction action items:

- Require all new city buildings to meet certain energy efficient and/or green building standard,
- Establish a City policy and implementation plan for energy efficient retrofits of existing buildings, and
- Develop and implement education program for City staff to increase energy saving behaviours at work.

Regarding community buildings GHG reduction actions, the greatest support was for the following:

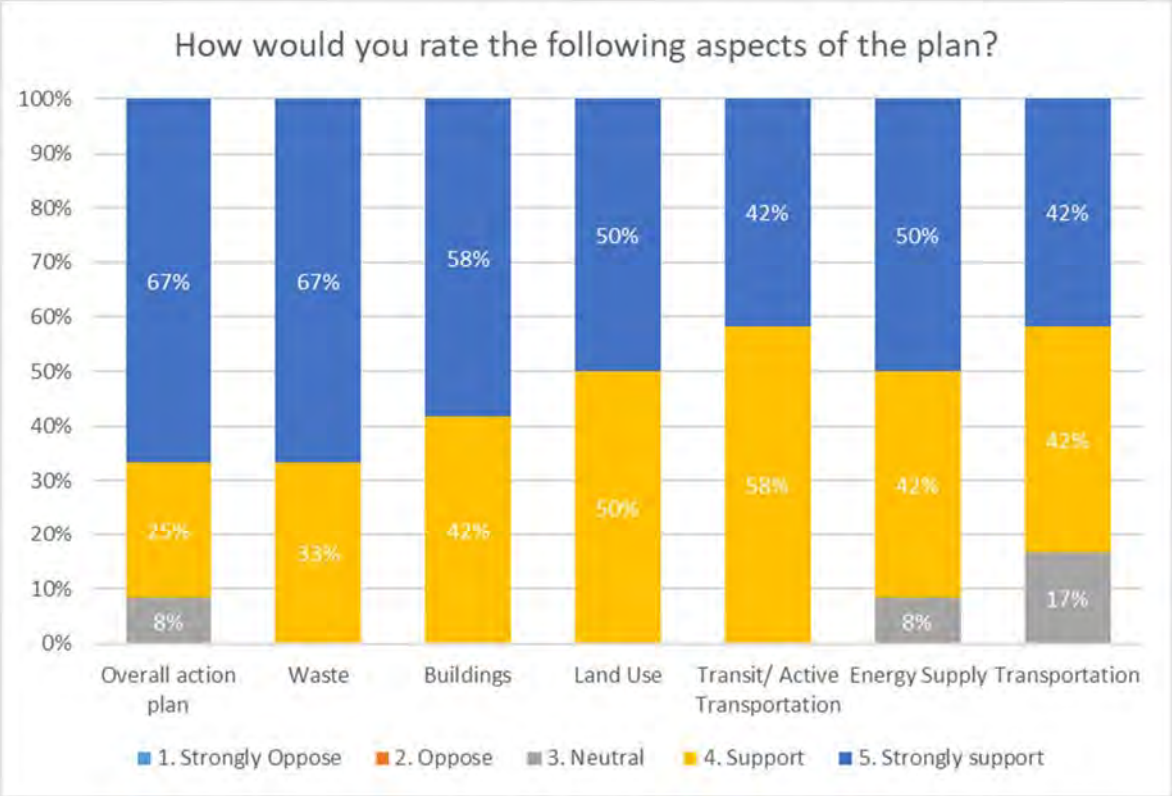
- Review and amend Bylaws to remove barriers for passive and more energy efficient buildings, in particular, relaxing maximum height requirements and calculating "build-to-lines" from the outer wall, and
- Use financial incentives to promote increased energy efficiency in new buildings.

Some stakeholders wanted the above two actions to be considered for density and infill. There was some concern on a fair and cost-effective process to enable non-financial incentives such as fast-tracking. Consideration should equally be given when looking at existing homes. There was concern that "encouraging the development of "eco-districts" on existing and new industrial sites" was too difficult with little precedence for success. Broad support was also expressed for a voluntary sustainability checklist.

4.4 Public Open House

Support of the GHG reduction plan and a desire to take actions further emanated from input at the public open house. Through the public open house evaluation forms and in conversation with the facilitators, no opposition to the GHG reduction action plan was expressed. Responses ranged from "strongly support" to "neutral" with no "oppose" or "strongly oppose" (see Exhibit 12 below).

Exhibit 12 Public Open House Evaluation Form Results



Written comments and verbal discussions tended to request that the action plan go further in reducing GHG emissions. A minority of comments expressed caution of actions depending on costs or performance (see Exhibit 13 below).

Exhibit 13 Open House Evaluation Form Written Comments Summary

Summary of Comments	
Earlier actions	1
More action on all	2
Satisfied with level of effort	1
Buildings - go further	4
Energy supply - go further	4
Trees – go further	3
Land use - cautious about actions	2
Transit - go further	3
Caution on electric buses	2
Waste - go further	5
Caution on waste costs	1
Transportation	4
Caution on electric car range	1

Based on the evaluation forms, support for the 9 % GHG reduction target was 83% with the remaining responses supporting the 5% target. These numbers should be interpreted with caution as only 12 people who attended the open house filled in this portion of the evaluation form.

5 Appendix

5.1 Survey Questions

Introduction

Leduc has shown strong leadership addressing climate change over the past several years, implementing initiatives that reduce greenhouse gas (GHG) emissions because they save the City money and improve the environment. The City is now developing a Local Action Plan for GHG Reduction. The plan will be a made-in-Leduc solution to a global issue - respecting our unique local priorities.

Have your say in shaping the development of the Plan, by taking 5 to 10-minutes to complete this survey. As a thank you for completing the survey, you may enter into a draw to win one of six Google Home mini smart speakers.

Please note that all information you provide will be kept in strictest confidence and will be used only for the purposes of this study. It is important to note that all analysis and reporting of the survey findings will be provided in aggregate only – no individual responses will be provided.

If you have any questions or concerns about this survey, you may contact the EcoSmart Hotline at 780-980-7107 or email ecosmart@leduc.ca.

Please respond before **June 4, 2018**.

Q1. I agree with the terms and conditions of data collection and data use, as detailed above.
This question is mandatory.

- Yes *[GO TO SURVEY]*
- No *[TERMINATE]*

Q2. What best describes you?

- I am a resident of Leduc
- I am a business owner in Leduc
- Other (please describe)

Q3. What is your age?

- Under 18
- 18-25
- 26-35

- 36-45
- 55+

Q4. What are the most important results of a GHG action plan? Please rank between 1 and 8, 1 being the most important.

Allow respondents to rank the following

- Lower GHG emissions
- Improved health and well-being (ex. More biking)
- Lower energy bills
- Lower transportation costs
- Neighborhoods that are more walkable and bicycle friendly
- Better air quality (ex. less car exhaust)
- More community pride from taking climate leadership
- More partnerships between the City and other local businesses, organizations, and municipalities through shared GHG reduction actions

Q5. Are there any other results not included above that you believe are important to the development of the GHG plan?

Leduc's Plan to reduce GHGs will guide the City for next ten years. Should the Plan include the following actions?
Allow the respondent to choose from: strongly disagree, disagree, neutral, agree, strongly agree.

Q6. The City of Leduc should:

- Use more renewable energy (e.g. solar, wind or geothermal energy) in place of traditional energy sources (coal, natural gas)
- Drive cleaner vehicles (e.g. smaller or electric vehicles)
- Provide or encourage electric vehicle charging stations
- Increase public transit
- Encourage carpooling
- Make their buildings more energy efficient e.g. with insulation, lighting upgrades, high quality windows, etc.
- Plan for more walking paths and bike lanes
- Plan neighborhoods to encourage walking instead of driving
- Plant more trees and preserve natural areas
- Encourage residents to recycle and compost more so less emissions come from landfill

- Encourage businesses to recycle and compost more so less emissions come from landfill

Q7. Residents and businesses should:

1. Use renewable energy in their homes (e.g. solar panels)
2. Drive cleaner vehicles (e.g. smaller or electric vehicles)
3. Take public transit more often
4. Carpool more often
5. Walk or bike more
6. Make their homes and businesses more energy efficient e.g. newer furnaces, weather stripping, efficient lighting etc.
7. Plant more trees and gardens
8. Recycle and compost more to put less in landfill which emits GHGs

Q8. Please provide any other comments you feel are important about a Local Action Plan for GHG Emission Reduction:

- Other: text box that allows 150 words.

Contest Release Form

Thank you for completing the survey! You now have the option to enter a randomly selected prize draw for
one of six Google Home mini smart speakers.

In order to enter, please provide your name and an e-mail address and/or telephone number where we can contact you. Personal information will only be used to contact the individual who has won the prize. Your name, phone number and e-mail address will not be used for any other purpose and will remain confidential.

The personal information (name, phone number, and/or e-mail address) provided as part of the Local Action Plan for GHG Reduction survey contest is collected under the authority of section 33(c) of the Freedom of Information and Protection of Privacy Act.

Q9. I would like to enter the contest for the random prize draw:

- Yes
- No

Business Name: _____
Q10. First Name: _____
Q11. Last Name: _____

Q12. E-mail Address: _____
Q13. Phone Number: _____

Q 14. I confirm that I have read and understood the Contest Rules which are available at www.leduc.ca/ourclimatesolutions

- Yes
- No

Q15. I give permission for the City of Leduc to e-mail me information about environmental initiatives from time to time

- Yes
- No

(Leduc logo)
Engage.Leduc.ca
Partnering with nature

Eco-smart Hotline
E-mail: ecosmart@Leduc.ca

5.2 Survey Tables

Exhibit 14 Most Important Results of a GHG Action Plan – (Associated Figure - Exhibit 7)

	More important (1, 2, 3, and 4)	Less important (5, 6, 7, and 8)
Improved health and well-being (ex. more biking)	78% *153*	22% 43
Lower energy bills	70% *136*	30% 59
Lower GHG emissions	65% *126*	35% 69
Neighbourhoods that are more walkable and bicycle friendly	51% *99*	49% 96
Better air quality (ex. less car exhaust)	51% *99*	49% 96
Lower transportation costs	49% *95*	51% 100
More community pride from taking climate leadership	25% 24	75% *171*
More partnerships between the city and other local businesses, organizations and municipalities through shared GHG reduction actions	12% 48	88% *147*

Exhibit 15 Most Important Results of a GHG Action Plan – Full Detail (Associated Figure - Exhibit 7)

	1	2	3	4	5	6	7	8
Improved health and well-being (ex. more biking)	16% *32*	23% *45*	26% *50*	13% *26*	11% *21*	5% *9*	3% *5*	4% *7*
Lower energy bills	29% *57*	15% *29*	12% *23*	14% *27*	10% *19*	7% *14*	8% *16*	5% *10*
Lower GHG emissions	28% *54*	17% *34*	10% *20*	9% *18*	7% *13*	11% *22*	8% *16*	9% *18*
Neighbourhoods that are more walkable and bicycle friendly	11% *21*	9% *17*	15% *29*	16% *32*	19% *38*	17% *34*	7% *14*	5% *10*
Better air quality (ex. less car exhaust)	7% *14*	15% *30*	17% *33*	11% *22*	14% *27*	21% *40*	11% *22*	4% *7*
Lower transportation costs	2% *4*	16% *32*	9% *18*	21% *41*	21% *40*	12% *23*	10% *19*	9% *18*
More community pride from taking climate leadership	2% *3*	1% *2*	5% *10*	5% *9*	10% *19*	14% *28*	30% *59*	33% *65*
More partnerships between the city and other local businesses, organizations and municipalities through shared GHG reduction actions	5% *10*	3% *6*	6% *12*	10% *20*	9% *18*	13% *25*	23% *44*	31% *60*

Exhibit 16 Views on Resident and Businesses GHG Reduction Actions (Associated Figure - Exhibit 9)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A	Total	Weighted Average
Use more renewable energy (e.g. solar, wind or geothermal energy) in place of traditional energy sources (coal, natural gas)	10% *19*	9% *16*	15% *27*	30% *56*	36% *66*	0% *0*	184	3.73
Drive cleaner vehicles (e.g. smaller or electric vehicles)	10% *19*	9% *17*	23% *43*	34% *63*	23% *43*	1% *1*	186	3.51
Provide or encourage electric vehicle charging stations	11% *20*	11% *21*	22% *41*	33% *61*	22% *41*	1% *1*	185	3.45
Increase public transit	5% *10*	7% *12*	20% *36*	34% *63*	33% *61*	2% *3*	185	3.84
Encourage carpooling	5% *9*	4% *7*	30% *54*	37% *68*	24% *45*	1% *2*	185	3.73
Make their buildings more energy efficient e.g. with insulation, lighting upgrades, high quality windows, etc.	4% *8*	1% *1*	11% *20*	36% *67*	47% *87*	1% *2*	185	4.22
Plan for more walking paths and bike lanes	6% *11*	4% *7*	16% *30*	*33%* *60*	41% *75*	1% *2*	185	3.99
Plan neighbourhoods to encourage walking instead of driving	4% *8*	3% *6*	17% *31*	35% *65*	40% *74*	1% *1*	185	4.04
Plant more trees and preserve natural areas	2% *3*	0% *0*	4% *9*	26% *47*	68% *153*	1% *2*	184	4.60
Encourage residents to recycle and compost more so fewer emissions come from landfill	4% *8*	1% *2*	5% *9*	23% *43*	66% *123*	1% *2*	187	4.46
Encourage businesses to recycle and compost more to reduce GHGs from the landfill	5% *9*	2% *3*	6% *12*	16% *29*	70% *130*	2% *3*	186	4.46

Exhibit 17 Views on City of Leduc GHG Reduction Actions (Associated Figure - Exhibit 10)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A	Total	Weighted Average
Use renewable energy in their homes	9% *16*	6% *11*	31% *58*	27% *50*	27% *50*	0% 0	185	3.58
Drive cleaner vehicles	9% *17*	13% *23*	27% *49*	31% *57*	20% *37*	1% *1*	184	3.40
Take public transit more often	5% *10*	9% *17*	30% *56*	31% *58*	22% *41*	2% *4*	186	3.57
Carpool more often	7% *12*	7% *12*	23% *42*	42% *77*	21% *39*	2% *3*	185	3.65
Walk or bike more	5% *9*	4% *7*	14% *26*	43% *80*	32% *60*	2% *3*	185	3.96
Make homes and businesses more energy efficient	4% *7*	1% *1*	10% *18*	44% *83*	41% *76*	1% *2*	187	4.19
Plant more trees and gardens	3% *5*	1% *1*	5% *10*	*38%* *70*	52% *96*	2% *3*	185	4.38
Recycle and compost more to put less in landfill which emits GHGs	5% *10*	2% *3*	4% *8*	26% *48*	61% *113*	2% *3*	185	4.38

Exhibit 18 Respondents Comments About a Local Action Plan for GHG Emission Reduction

Theme	Number of Mentions
Cost	17
Cost/benefit	3
Capital cost	3
Taxes	2
Waste management	12
Active transportation	10
Renewable energy	7
EV concerns	7
Energy efficiency & conservation	6
Unsupportive of GHG reduction planning	5
Air pollution	3
Public wellbeing	3
Realistic approach	3
Public transit	2
Smart urban planning	2
Financial incentives	2
Urban agriculture	1
Reduce consumption	1
Education	1
Management	1
Transportation infrastructure	1
Combined heat and power	1

5.3 Display Comments

Exhibit 19 Display Comments - How Should the City, Residents and Businesses Reduce GHGs?

Theme	City	Residents	Total
Waste management	6	18	24
Active transportation	0	11	11
Reduce consumption	1	7	8
Energy efficiency & conservation	1	7	8
Transit	1	2	3
Electric vehicles	2	1	3
Air pollution	1	2	3
Carpool	0	2	2
No idling	1	1	2
Plant trees	1	0	1
Electrify lawn & garden tools	0	1	1
Green urban planning	1	0	1
Green recognition programs	1	0	1
Smart urban planning	1	0	1
Gardening	0	1	1
Pesticide free	1	0	1
Smart grid	1	0	1
Incentives	1	0	1
HOV lane	1	0	1

5.4 LEAB GHG Reduction Sub-Committee Members

- Councilor Lars Hansen
- Katie Oliver
- April Ziegler
- Brad Beesley
- Douglas Hube
- Thorren Koopmans

5.5 Stakeholder Workshop Attendees

- Jason Atkinson – Enmax
- Roger Steele – Edmonton Airport

- Barbara Mckenzie – Leduc Nisku Economic Development Association
- Amanda Griffin – Melcor Development
- Mark Filteaw – Atlas Gas Utilities
- Dave Turbul – Canadian Home Builders Association
- Melissa Turnbull – Alta Gas Utilities
- Dennis Peck – Canadian Home Builders Association
- Beverly Beckett – City of Leduc Councilor
- Doug Hube – LEAB member, IDA, LECC
- Andre Banks – Melcor Development
- Tamara Chubb – GFL Environmental

5.6 Leduc GHG Reduction Options

This is the list of GHG reduction options that were reviewed at the stakeholder workshop.

5.6.1 Energy Supply – Corporate

1. Install more renewable energy units on city owned and operated buildings and facilities

5.6.2 Energy Supply – Community

1. Modify permitting process to fast track and standardizes the process of applying and inspecting solar PV and solar thermal systems
2. Promote (market) existing programs that provide support for renewable energy installations
3. Provide “top-up” (additional) financial incentives to enhance offerings from existing programs
4. Encourage new buildings to be solar ready – e.g. by providing developers / builders with a checklist and education materials
5. Determine whether it is cost effective for the City to pursue district energy – including where and what kind of system

5.6.3 Buildings – Corporate

5. Require all new city buildings to meet certain energy efficient and/or green building standard
6. Establish a City policy and implementation plan for energy efficient retrofits of existing buildings
7. Develop and implement education program for city staff to increase energy saving behaviours at work

5.6.4 Buildings – Community

1. Review and amend Bylaws to remove barriers for passive and more energy efficient buildings
   a) Relax maximum height requirements
   b) Calculate "build-to-lines" from the *outer wall*
   c) Measure floor area from the *inner wall*
   d) Amend height and floor area ratios
   e) Allow building projections for passive solar shading to project into the required yard
2. Use non-financial incentives to promote increased energy efficiency in new buildings- e.g., fast-tracking permit applications for buildings that meet certain standards
3. Introduce a (voluntary) sustainability checklist for new developments
4. Increase capacity of city staff to promote green building development—e.g., training, education
5. Encourage development of "eco-districts" on existing and new industrial sites –modify development guidelines to promote eco-industrial districts
6. Pass Bylaw to allow Clean Energy Improvement Financing / Property Assessed Clean Energy (PACE) in Leduc
7. Promote existing programs that provide support for energy efficiency improvements to buildings – e.g., develop and implement outreach program

5.6.5 Transportation

Active Transportation

1. Develop active transportation plan (i.e. walking and biking)
2. Develop and implement education campaign to promote alternative modes of transportation

Electric Vehicles

3. Develop and implement electric vehicle policy for new developments – e.g., require new mixed use, multi-unit residential and parking buildings to have electric vehicle charging infrastructure
4. Introduce City-owned charging stations for electric vehicles

Corporate

5. Establish policy to accelerate the retirement of less efficient vehicles, where justified
6. Establish a vehicle purchasing policy- purchase best in class efficient vehicles, *where justified*
7. Establish a vehicle purchasing policy- purchase natural gas or electric vehicles and buses, *where justified*
8. Establish vehicle maintenance policies and operating (driving) guidelines that reduce energy consumption
9. Incorporate energy efficiency considerations into road construction and maintenance plan – e.g., full depth reclamation, use of warm asphalt

5.6.6 Transportation

Public Transit

1. Increase use of public transit – introduce more park-n-ride lots
2. Increase use of public transit – increase hours of service
3. Increase use of public transit – increase marketing of transit service and benefits of using it
4. Increase use of public transit – introduce dedicated bus lanes
5. Increase use of public transit – develop / strengthen partnerships with schools and businesses to offer passes and/or reduced fares
6. Increase use of public transit – offer responsive transit service such as taxi partnerships or flexible microtransit

Education

7. Work with local businesses to encourage car pooling to work – e.g., businesses offer incentives to employees
8. Develop and implement anti-idling program

5.6.7 Urban Planning

1. Ensure planning processes lays out city blocks to maximize passive solar design where possible
2. Encourage infill – identify areas where further infill is possible and implement measures to encourage infill e.g. engagement and education
3. Encourage infill close to services- Set goals for % population walking distance to various services, identify areas where further infill is possible and implement measures to encourage infill e.g. engagement and education
4. Encourage secondary suites – e.g. streamline process for approving new suites, undertake education campaign, reduce fees
5. Encourage mixed use development – e.g. apply mixed use zoning to downtown and other appropriate areas

5.6.8 Waste & Wastewater

1. Mandate separation of food waste for commercial sector, and precede with an education campaign
2. Determine the feasibility and impact of garbage baling technology
3. Assess the feasibility, cost and impact of split collection vehicles (collect waste, organics and other recyclables at same time)
4. Request contractors optimize routing to minimize energy consumption

5. Introduce an organics processing facility at LDRWMF
6. Feasibility study on future Eco-Station enhancements to include other waste streams i.e. metals, glass, mattresses, Styrofoam
7. Reduce collection frequency and/or reduce bin size (plus education)
8. Financial incentives for devices that reduce water consumption
9. Financial incentives for outdoor water saving devices

5.6.9 Education & Awareness

1. Create a GHG reduction education and outreach hub – as part of Leduc's environmental services
2. Introduce sustainability awards for businesses, efficient buildings, low waste policies etc.

5.7 Open House Evaluation Form

6 Open House Feedback Form

Over the past year the City of Leduc has solicited input and ideas from the community, staff and civic leadership. The consultant team has assessed the input gathered and developed draft recommendations that offer the best greenhouse gas (GHG) emission reduction opportunities for the money invested.

These recommendations include a range of initiatives and as with any civic priorities any new programs or expenditures will be reviewed and considered by Council on an annual basis. This action plan provides the road map for actions to be considered annually through the budget process.

We welcome your feedback on the specific actions and overall plan being currently considered. Following the Open House the GHG Emission Reduction Action Plan will be finalized and forwarded to Council for final review and approval.

1. Considering the proposed targets for emission reduction which level of reduction do you support the City striving towards. Please choose one.

    a) _____ Business-as-usual – No reduction/modest increase

    b) _____ 3% emission reduction

    c) _____ 5% emission reduction

    d) _____ 9% emission reduction

2. On a scale of 1 to 5 with 5 being strongly support and 1 being strongly oppose how would you rate the following aspects of the plan?

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
a. Overall action plan – all sectors					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
b. Buildings					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
c. Energy Supply					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
d. Land Use					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
e. Transportation					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
f. Waste					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector

	1. Strongly oppose	2. Oppose	3. Neutral – don't support or oppose	4. Support	5. Strongly support
g. Transit/Active Transportation					

Comments– Please share any reasons regarding your level of support and on any of the specific action items listed under this sector.

Additional comments/suggestions

Greenhouse Gas (GHG) Reduction Plan Approval

Presentation to Council

Shawn Olson, Director, Engineering, City of Leduc
Kerra Chomlak, Environmental Sustainability Coordinator, Leduc
May 13, 2019

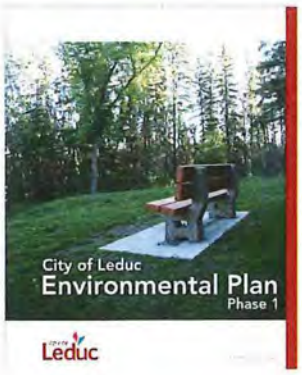
www.leduc.ca

CITY OF Leduc

Outline

- Background
- Review Plan:
  - Targets
  - Actions
  - Costs & Benefits
  - Next Steps
- Seek Approval

Past Council Direction



PARTNERS FOR CLIMATE PROTECTION

Milestone 1
Create a Baseline Emissions Inventory and Forecast

Milestone 2
Set Emissions Reduction Targets

Milestone 3
Develop a Local Action Plan

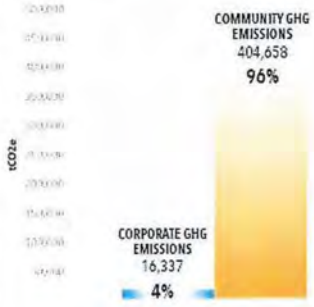
Milestone 4
Implement the Local Action Plan

Milestone 5
Monitor Progress and Report Results

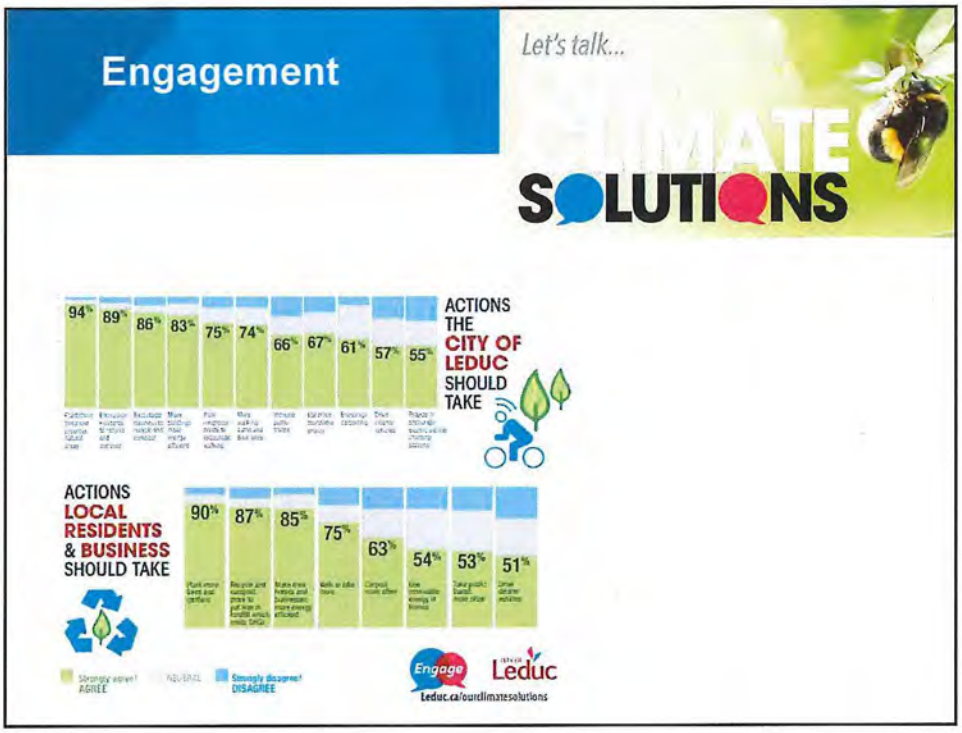
City of Leduc GHG Inventory

Leduc emitted about **421,035** tCO_2e of GHGs in 2015

2015 Community and Corporate GHG Emissions (tCO_2e) Comparison



Community and Corporate GHG Emissions (tCO_2e), by Source Sector


Engagement
Let's talk...
CLIMATE SOLUTIONS
94% 89% 86% 83% 75% 74% 66% 67% 61% 57% 55%
ACTIONS THE CITY OF LEDUC SHOULD TAKE
ACTIONS LOCAL RESIDENTS & BUSINESS SHOULD TAKE
90% 87% 85% 75% 63% 54% 53% 51%
Strongly agree/ AGREE
NEUTRAL
Strongly disagree/ DISAGREE
Engage
Leduc
Leduc.ca/ourclimatesolutions


ENVIRONMENTAL success!
Operational EFFICIENCY + Greenhouse Gas REDUCTIONS
RENEWABLE ENERGY
Rooftop Solar Project
Leduc Recreation Centre (LRC) & City Operations Building
5,622
$100,000
1,600
1,025
220
LOW GHG EMITTING TRANSPORTATION
Leduc Transit:
278
1,300
147%
173%
LOW GHG WASTE
Organics diversion:
300
10,450
ENERGY-EFFICIENT BUILDINGS
LRC: Designed with technologies that reduce GHG emissions including:
EFFICIENT INFRASTRUCTURE
LED streetlights:
1,100,000
150
710
150
SMART URBAN PLANNING
Crystal Creek Outline Plan:
Key GHG reduction elements include:
PARTNERING with nature
Engage
Leduc

Actions

LOW SCENARIO 3% GHG Reduction Target	MEDIUM SCENARIO 5% GHG Reduction Target	HIGH SCENARIO 9% GHG Reduction Target
LED Streetlights	Create Energy Efficiency Champions	Green Building Standard for City
Solar on LRC, Operations Buildings	Promote Efficiency and Renewable Programs, GHG Education Hub	Electric Commuter Bus
Energy Retrofits to City Buildings	City to Buy Best-in-Class New Fleet	Organics Processing Facility
Infill – High Density Development	EV Public Charging Stations and Policy	PACE (Residential & Commercial Buildings)
Mixed Use Development	Enhanced Commuter Transit	Waste Reduction Education for Business & Apartments
Biocover For Landfill	Promote Active Transport, Enhance Transit & U-Pass Marketing	Organics Diversion Policies & Programs for Business & Apartments
Garbage Baling	Promote Secondary Suites	Variable size cart program
Tree Planting	Lower Tippage Fees for Organics	New Solar for City Buildings

Costs

LOW SCENARIO – Actions to achieve a 3% target

Note there are no new costs associated with the actions in the "low" scenario.

MEDIUM SCENARIO – Actions to Achieve a 5% target

The medium scenario actions include: **$1,205,000** in operating costs, **$490,500** in staffing costs and staff set up costs and **$722,000** in capital or one-time costs over 11 years (2020 - 2030).

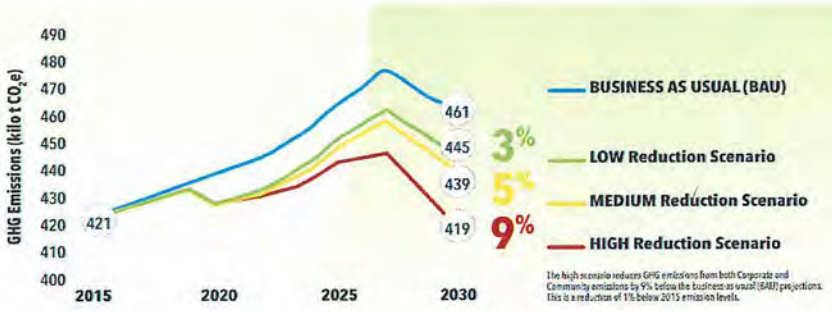
HIGH SCENARIO – Actions to Achieve a 9% target

In addition to the medium scenario costs, the high scenario actions require the following incremental costs: $185,000 in operating costs, up to $937,000 staff and staff start up costs and $1,568,670 in capital, or one-time costs over 11 years (2020 - 2030).

The total costs to achieve the 9% target are: **$1,390,000** in operating costs, up to **$1,427,500** in staffing costs and staff set up costs and **$2,290,670** in capital, or one-time costs over 11 years (2020 - 2030).

The year 2031 is shown in order to reflect costs that would continue at the end of 11 years.

Targets



Next Steps

1. Administration to conduct an annual review to assess whether to implement actions from the medium and high scenarios considering grant opportunities, and available human and financial resources;

2. Report annually to the public on implementation of the actions and progress towards the GHG targets in the annual Environmental Progress Report.

Recommendation

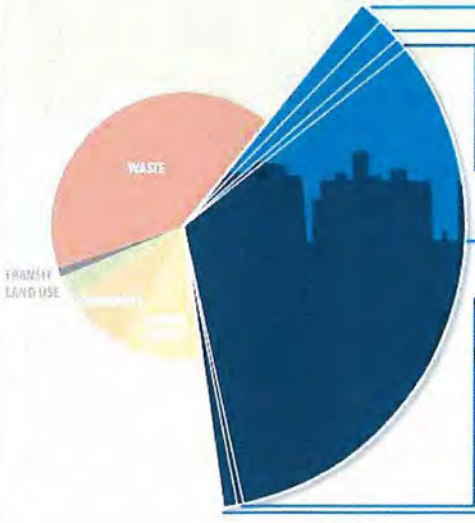
1. That Council approve the overall target of 3% below business-as-usual projections by 2030. This target can also be broken down into the following components based on the FCM Partners for Climate Protection (PCP) program format:
   - Corporate Target: 8% reduction from 2015 by 2030 (equivalent to 20% reduction below business-as-usual forecast)
   - Community Target: 6% above 2015 by 2030 (equivalent to 3% reduction below business-as-usual forecast)
2. That Council approve the City of Leduc Greenhouse Gas (GHG) Reduction Action Plan.

Comments? Questions?

Optional Slides

CITY OF Leduc

PROPOSED BUILDING-RELATED GHG REDUCTION ACTIONS



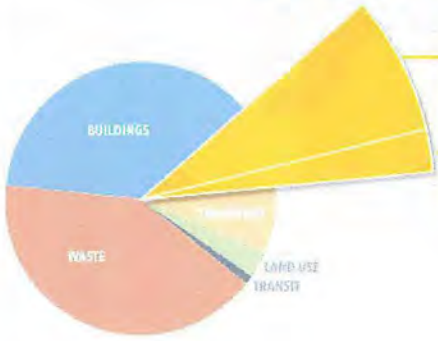
ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
LED Streetlights	2017	No new budget request	21,900
Energy Retrofits to City Buildings	2019	Planned in 2019 Projects	25,500
Promote Provincial Energy Efficiency Programs	2020	$105,000 over 10 years	13,700
Property Assessed Clean Energy (PACE)**	2020	TBD***	474,950
Create Energy Efficiency Champions	2023	$40,000 over 8 years	2,800
Create Efficiency Standards for New City Buildings	2026	$297,000 over 5 years*	9,600

* *Depending on Facilities Master Plan, approved budgets and future technological advancements (e.g. solar costs).*

** *PACE is a program where building owners can finance renewable energy projects (e.g. solar panels) or energy efficiency upgrades (e.g. new windows) through their property tax. The loan remains with the property even through a sale, thus the term may be extended over 20 years or more. Often, lower interest rates are available. PACE does not affect the borrowing capacity of the property owner.*

*** *Information on costs for municipalities to administer the program to be announced by Energy Efficiency Alberta. Potential for grants.*

PROPOSED
ENERGY SUPPLY-RELATED
GHG REDUCTION ACTIONS



ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
Existing Solar on LRC & Operations Building	2017	No additional costs	26,600
New Solar on Existing City Buildings	2023	$728,430 over 3 years*	7,450

*Energy savings could potentially exceed these costs. A payback of 15 years is assumed, based on existing projects.

PROPOSED
LAND USE-RELATED
ACTIONS

ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
Infill Policy – High Density Developments	2020	Within existing resources	36,200
Policy for Mixed Use Development	2020	Within existing resources	11,500
Promote Secondary Suites	2023	$10,000 over 3 years	3,800
Tree planting	Annually	No new budget request	2,240

TRANSIT & ACTIVE TRANSPORTATION-RELATED ACTIONS

ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
Enhance Commuter Transit	2026	$1,600,000 over 5 years*	6,600
Promote Active Transport, Enhanced Transit Marketing & U-Pass Marketing	2020	$50,000 over 1 year*	22,080
Electric Commuter Bus	2026	$269,000 over 1 year**	350

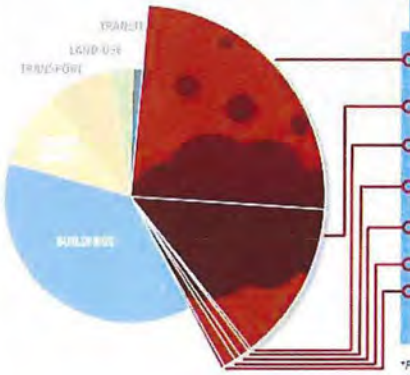
*Potential for incremental fare revenue to offset some of the incremental costs.

**This is incremental to the cost of a conventional diesel bus and does not include the cost of new fleet management requirements. However there is the potential for fare revenues and significant benefits from avoided fuel costs.

TRANSPORTATION-RELATED ACTIONS

ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
Buy Best in Class New Fleet	2020	Within existing resources	400
Electric Vehicle Charging Stations Policy for New Developments	2023	Within existing resources	250
Public EV Charging Stations	2026	$121,000 over 5 years	690

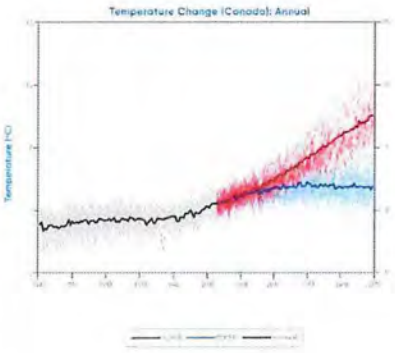
PROPOSED WASTE-RELATED ACTIONS

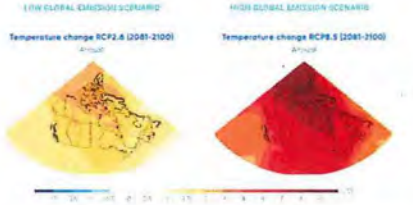


ACTION	START	POTENTIAL FUTURE COSTS	LIFETIME GHG REDUCTIONS (tCO_2e)
Biocover For Landfill	2019	Leduc & District Regional Waste Management Authority (LDRWMA)	470,100
Garbage Baling*	2019	LDRWMA (potential increase to environmental fee)	255,000
Lower Tippage Fees if Organics Sorted	2020	LDRWMA (potential increase in environmental fee)	3,700
Organics Processing Facility	2026	LDRWMA (potential increase to environmental fee)	12,700
Waste Reduction Education for Business & Apartments	2020	$60,000 over 2 years	7,500
Commercial/Business Organics Diversion	2026	To be determined based on final program scope however there will likely be costs of $50,000 per year	15,100
Variable Cart Size Program	2026	$400,000 over 5 years	4,800

*Preliminary results indicate significant methane reductions from garbage baling

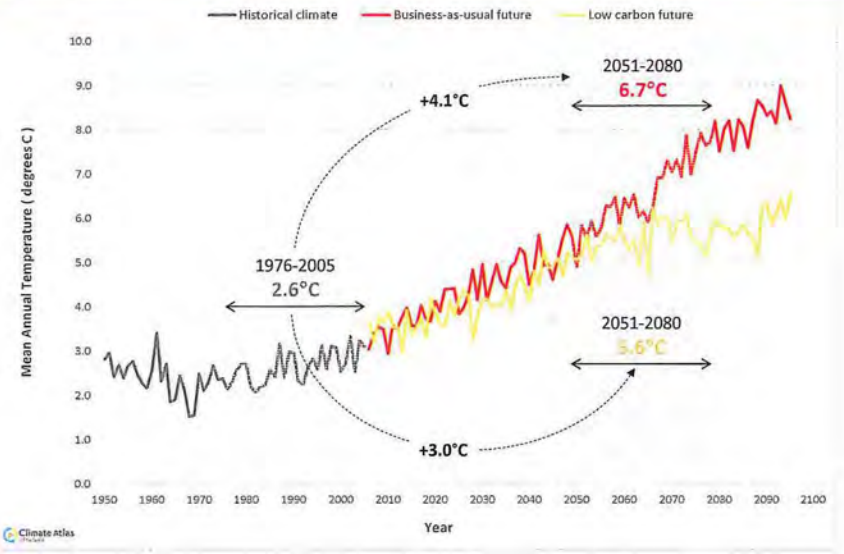
Reasons for a Plan



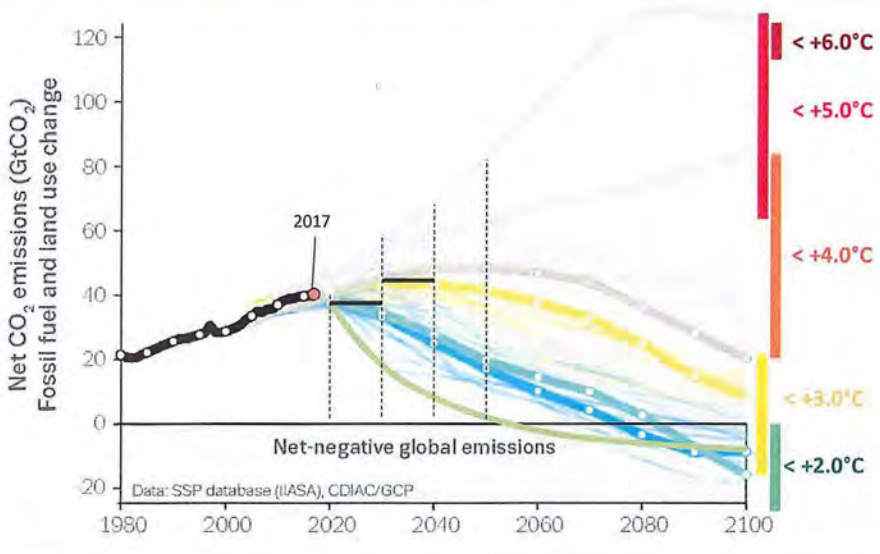


Urban areas are responsible for up to **70%** of human made GHG emissions

Annual temperature for City of Leduc under two climate futures

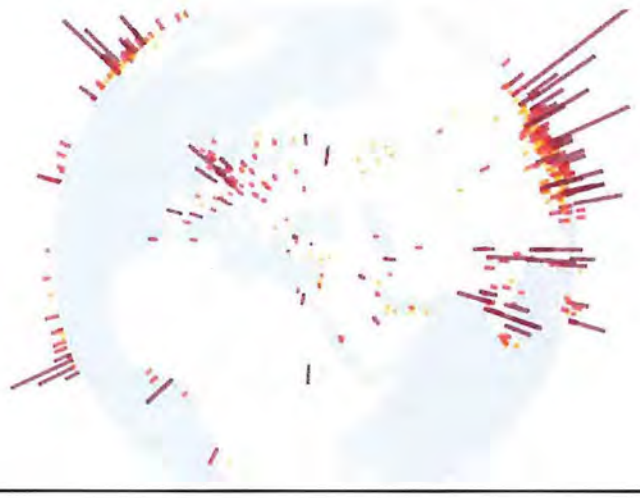


Different carbon footprints underling different levels of warming



Managing climate change starts in cities

Urban areas are responsible for up to **70%** of anthropogenic GHG emissions



New Costs

	Buildings				Energy Supply	Land Use	Transit/Active Transportation			Transport	Waste	
	Green Building Standards for New City Buildings	Create Energy Efficiency Champions	Promote Efficiency and Renewable Programs, GHG Education Hub	PACE	New Solar on Existing City Buildings	Promote Secondary Suites	Promote Active Transport Enhance Transit & U-Pass Marketing	Enhance Commuter	Electric Commuter Bus	Electric Vehicle Charging Stations & Policy	Waste Diversion Education, Policies & Programs for Businesses & Apartments	Variable Size Cart Program
Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Medium	N/A	$40,000	$595,000	N/A	N/A	$10,000	$50,000	$1,600,000	N/A	$122,000	N/A	N/A
High	$297,000			$248,500 - $490,500	$728,000				$269,000		$550,500	$400,000
Total Medium & High	$297,000	$40,000	$595,500	$248,500 - $490,500	$728,000	$10,000	$50,000	$1,600,000	$269,000	$122,000	$550,500	$400,000
Benefits Include	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Energy cost savings	Increased fare revenue	Increased fare revenue	Avoided fuel costs	Avoided fuel costs	Potential savings depend on tipping fees at LDRWMF	

Medium

Action	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Sub-total 2020-2030
TOTAL OPERATING	80,001	30,000	5,000	13,333	13,333	13,333	320,000	212,000	212,000	214,000	214,000	200,000	1,205,000
TOTAL STAFF	50,500	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	490,500
TOTAL CAPITAL	0	0	0	0	0	0	710,000	2,000	2,000	4,000	4,000	0	722,000

High

Action	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Sub-total 2020-2030
TOTAL OPERATING	30,000	30,000					25,000	25,000	25,000	25,000	25,000	25,000	185,000
TOTAL STAFF	79,000 - 101,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	66,000 - 88,000	739,000 - 981,000
TOTAL CAPITAL	0	0	0	248,000	240,000	240,000	628,394	54,204	51,807	49,533	49,533	0	1,568,670

First 3 Years

Medium	2020	2021	2022
Operating:	$50,000 (transit promotions) $30,000 (GHG education) $44,000 (0.5 FTE) **$124,000 (Total)**	$30,000 (GHG education) $44,000 (0.50 FTE) **$74,000 (Total)**	$5,000 (GHG education) $44,000 (0.50 FTE) **$49,000 (Total)**
Capital:	**$6,500** staffing start up	**$0**	**$0**

High	2020	2021	2022
Operating:	$50,000 (transit promotions) $30,000 (GHG education) $30,000 (ICI/MF waste program) $88,000 (1.0 FTE) **$198,000 (Total)**	$30,000 (GHG Education) $30,000 (ICI/MF waste) $132,000 (1.5 FTE) **$192,000 (Total)**	$5,000 (GHG Education) $132,000 (0.50 FTE) **$137,000 (Total)**
Capital:	**$6,500** staffing start up	**$13,000** staffing start up	**$0**

COUNCIL UPDATES

MEETING DATE: 13 May 2019

Leduc & District Regional Waste Management Authority

SUBMITTED BY: Terry Lazowski, LDRWMA Board Chair

COUNCIL UPDATES

On April 17, 2019, Leduc & District Regional Waste Management Authority (LDRWMA) hosted an information session for the elected officials of the member municipalities. The session included updates of various initiatives undertaken by LDRWMA and are attached as schedule A. A presentation was also made by Bill Barcley, a lawyer from RMRF comparing the governance structure of Authorities vs. Commissions. I have attached the reference material from the meeting in order that my fellow council members including those who were unable to attend the meeting can review and provide direction as to Council's preference for the governance of LDRWMA moving forward. Councils from all member municipalities are being asked to provide the same direction to their Board members so that a vote can be held at the next board meeting on May 15, 2019.

COMPARISON – REGIONAL SERVICES COMMISSION;
BOARD, AUTHORITY OR COMMITTEE ESTABLISHED BY AGREEMENT

	REGIONAL SERVICES COMMISSION	BOARD COMMITTEE, AUTHORITY FORMED BY AGREEMENT BETWEEN PARTICIPATING MUNICIPALITIES
OBJECTS OR SERVICES PROVIDED	Services authorized in the Regulation establishing the Commission – e.g. Solid Waste, Water, Sanitary Sewage, Assessment Services, Emergency Services etc.	Any municipal purpose or service which a Municipal Authority is authorized to provide.
APPOINTMENT OF DIRECTORS	Initial Directors and Chairman appointed by Minister. Subsequent Directors and Chairman appointed by Bylaw approved by Minister – a Director who represents a Municipality must be a member of Council.	Directors appointed in the manner provided for in the Agreement establishing the Authority, Board or Committee.
POWERS	Is a separate legal entity and has the powers as set out in the Act and the Regulations establishing the Commission. Has natural person powers, can own land, and may expropriate. Must hold meetings in public. Service Area is limited to geographic boundaries of members. Not designed to make profit.	Not a separate legal entity. Cannot hold land or borrow funds in its own name. Not designed to make profit.
BORROWING	Can borrow with the approval of the Directors of the Commission, subject to the restrictions set out in the Act, and the Debt Limit Regulation.	Cannot borrow. Must obtain money from the members of the Authority.

	REGIONAL SERVICES COMMISSION	BOARD COMMITTEE, AUTHORITY FORMED BY AGREEMENT BETWEEN PARTICIPATING MUNICIPALITIES
CONTROL	Directors manage and control the Commission, subject to the restrictions in the Act and Bylaws. Directors are appointed by the Municipal Authorities.	Can be controlled in the manner set out in the Agreement under which the Authority, Board or Committee is established.
AUTHORIZING LEGISLATION	*Municipal Government Act,* RSA 2000, c. M-26: Part 15.1.	*Municipal Government Act,* RSA 2000, c. M-26.
HOW ESTABLISHED	Regulation made by the Lieutenant Governor in Council (Cabinet) on the recommendation of the Minister of Municipal Affairs.	By Agreement between participating Municipal Authorities setting out powers, duties and functions of the Authority, Board or Committee.
LIABILITY	As a separate legal entity a commission is liable for its own debt or damages. Without more, municipal members are not liable.	As it is not a separate legal entity, municipal members are liable for the debt or damages of an Authority.
RELATIONSHIP TO MEMBER MUNICIPALITY	Exists separate and apart from member municipality, but the Commission is governed by a Board made up of Councillors appointed by the municipalities. Historically, services must be made available to each member municipality at the same price.	No separate existence. Similar to a partnership. Each member municipality is jointly and severally liable for actions of Authority.

Update on 2019 Activities at the Leduc and District Regional Waste Management Facility (LDRWMF)

Jan. 3, 2019

1. Baling Strategy

- With the pending closure of the east landfill cells in mid to late 2019, the Authority prepared and evaluated many waste diversion options. Detailed reviews and costs assessments were completed for various waste to energy facilities, an on-site composting facility to render waste non-bird attracting, and hauling waste off-site. These options were all cost-prohibitive.

- The most cost effective solution was determined to be a "bale-fill" operation, where wet waste is baled, wrapped in plastic and placed in the westlands. This maximizes the use of the remaining landfill space in the west lands, which have a remaining life of approximately 20 years.

- Baling saves on landfill space by compacting the waste by approximately 30%, it reduces leachate, reduces greenhouse gases, and does not attract vectors.

- The Authority has purchased a Komptech slow speed shredder ($900K), and a Flexus combination baler/wrapper from Europe ($1.1M). This process will produces round bales that can be stacked with a tele-handler, which is also included in the approved budget.

- Modifications will be made to the original Materials Recovery Building (MRF) building east of the scale, to host the baling operation for approximately $160K.

- There is a potential for the bales to be used as fuel in a waste to energy facility in the future.

Komptech Shredder:

Flexus Baler/Wrapper:

2. New Public Drop Off (PDO) Area

- A new PDO area for residential traffic will be constructed mid-2019. This will be located south of the scales near the curve on the entrance road. It will include a new scale for residential/public traffic, leaving the original scales for commercial traffic.

- Reasons for this change:
    - The original MRF building will be re-purposed to house the baler, and will no longer be available for drop-off of electronics, paint, household hazardous waste, etc.
    - Safety is improved when the public can no longer access the landfill tipping face.
    - Waste can be more easily sorted with clear, user-friendly signage and orderly flow. This will increase recycling and organics diversion.

- Savings in operational costs will be gained by sorting more dry waste from wet waste because less waste will have to be baled (dry waste can continue to be directly landfilled in the west lands).

- The Technical Committee researched various PDO designs and selected the elevated pad design with a circular flow, which improves safety and keeps heavy equipment away from public. The detailed design in currently underway, with the facility costing approximately $2.5 - $3.5 M depending on the amount of pavement that will included, and whether Phase 2 is constructed at the same time.

3. Bio-Cover Project

- The east lands will be capped with an innovative bio-cover that uses a topsoil/compost mix instead of traditional clay cap. This project was supported with a provincial grant, reducing the cost of the innovative design by approximately half ($4M project, supported by $2M grant).

- There is a potential for greenhouse gas offset revenue, however this is dependent on a provincial protocol being developed. The protocol development is included in the project cost.

- Currently soil is being collected for the cap and construction will begin late 2019.

4. Tippage Rate

- The tippage rate will not be increased from 2018 to 2019; it will remain steady at $72/tonne for waste and $64.50 for organics. The rate will be evaluated again mid-2019 when the new baling operation is in place. Note that the budget only provides for basic operations such as cell construction and does not support any new sustainability projects (such as new recycling initiatives for wood, mattresses, etc.) above and beyond basic operations such as cell construction.

5. Authority vs. Commission

- At next board meeting, the Authority will be asked to confirm whether there is a desire to hear an information presentation at a joint Council meeting, which will involve research and preparation of an information package.

- Following the joint information meeting, the decision making process will be:

    a. Individual Councils discuss the merits and challenges of transition to a Commission, and hold a vote on whether they are in favor.
    b. Authority members hold a regular meeting to vote on the proposal, as directed by their municipality. A unanimous decision of all Authority members will be required to move to a Commission.

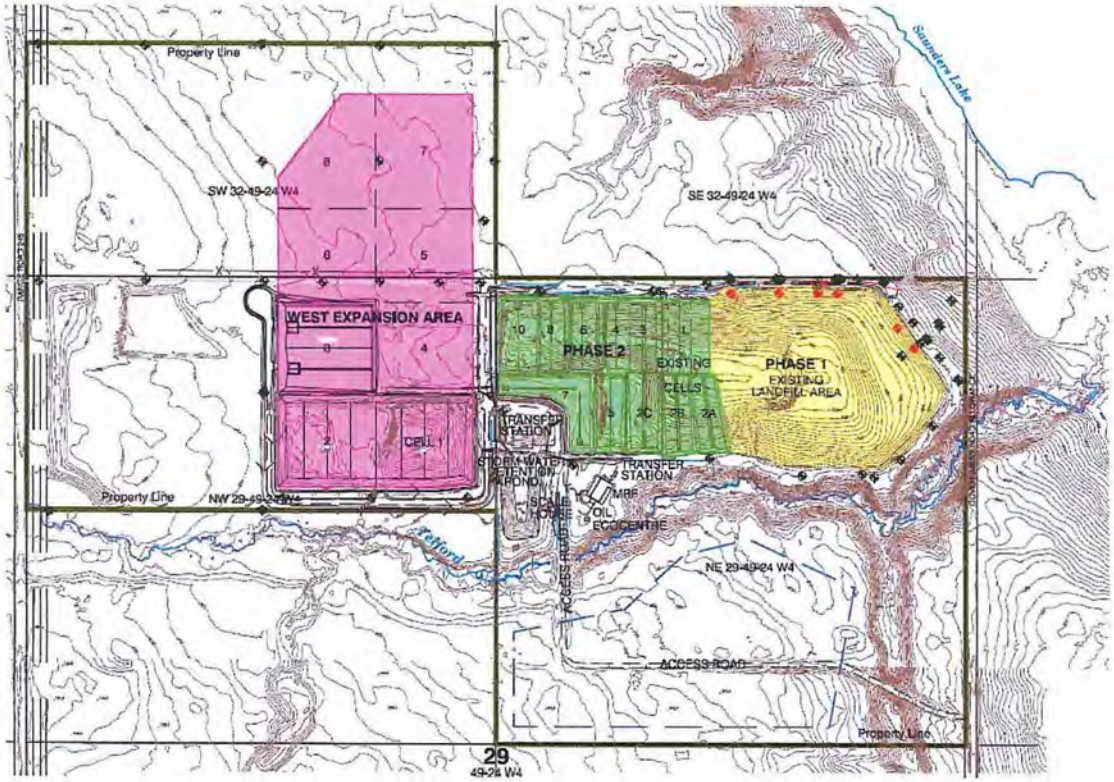
6. Next Steps/Communications

The 2019 projects are a significant change to the operations of the LDRWMF. The closing of east lands and biocover construction, the bale fill operations in the west lands, and the new Public Drop Off area will reduce the environmental impact of the landfilling operations. This message will be communicated to the public mid-late 2019, when the new PDO is complete.

LDRWMA Information Session

17 April 2019

Leduc & District Regional Waste Management Authority



LDRWMA Board

City of Leduc
Councillor Terry Lazowski
Chair

Town of Devon
Councillor Stacey May
Vice-Chair

City of Beaumont
Councillor Martin Stout

Town of Calmar
Mayor Wally Yachimetz

Leduc County
Councillor Glenn Belozer

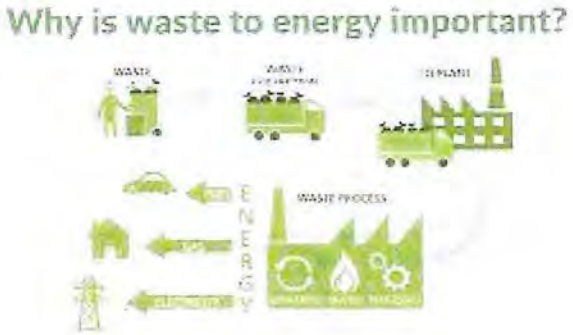
Waste Diversion Programs

Material	Outgoing Tonnes
Organics	4171
E-Waste	48
Waste Oil	34
Paint & Household Hazardous Waste	20
Oil Filters / Plastics	16
Tires	85
Paper & Cardboard	10
Propane Tanks	8
Batteries	16

From 2018 Annual Report

MSW Diversion Options

Composting



Waste to Energy

Transfer Waste Off-Site

MSW Shredding and Baling

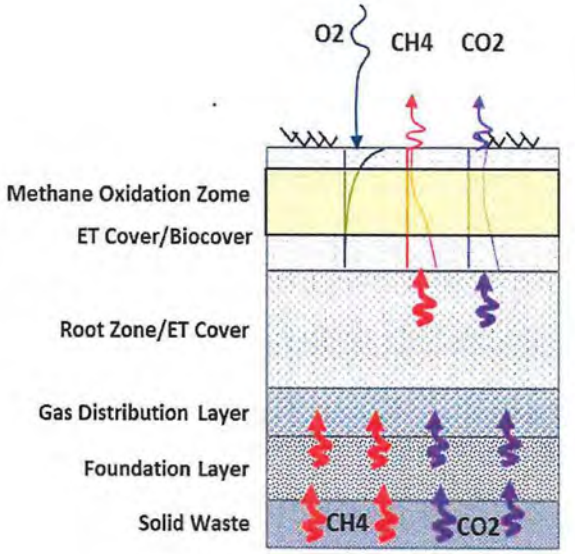
Komptech Terminator 6000 Shredder

Flexus Baler

Bale Placement - West Site

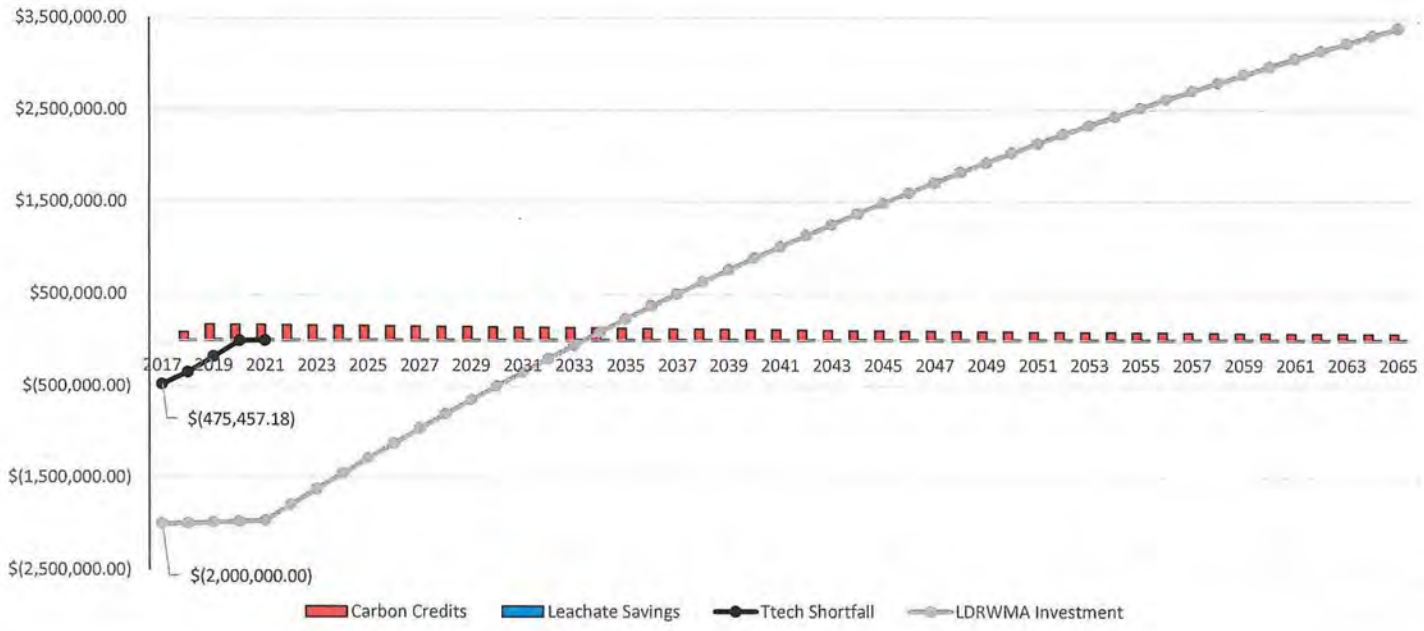
Public Drop Off

Evapotranspiration Landfill Biocover Project



c. Methane Oxidation Process

Post Project Financial Projection



Authority vs. Commission

Leduc & District Regional Waste Management Authority

Comparison of Alternative Structures

	Regional Services Commission	Joint Municipal Authority
Creation	• By regulation under MGA	• By agreement between participating municipalities
Board of Directors	• Initially appointed by minister • Subsequently appointed in accordance with bylaws • Duty to act in the best interests of the commission	• Appointed by council in accordance with agreement

Comparison of Alternative Structures

	Regional Services Commission	Joint Municipal Authority
Liability	• Separate legal entity • Member municipalities are like shareholders and are not liable for actions of commission	• Ultimate accountability and liability remains with member municipalities
Powers	• Can own property (including through expropriation) • Can borrow money (including from Alberta Capital Finance Authority	• Cannot own land or borrow money

Comparison of Alternative Structures

	Regional Services Commission	Joint Municipal Authority
Grants	• Access to provincial funding and grants (including grants specific to regional service commissions)	• Access must be through a member municipality or contractor. More complex and not as broad.
Relationship to Member Municipality	• Exists separate and apart from member municipality • Historically, services must be made available to each member municipality at the same price	• No separate existence • Similar to a partnership • Each member municipality is jointly and severally liable for actions of Authority

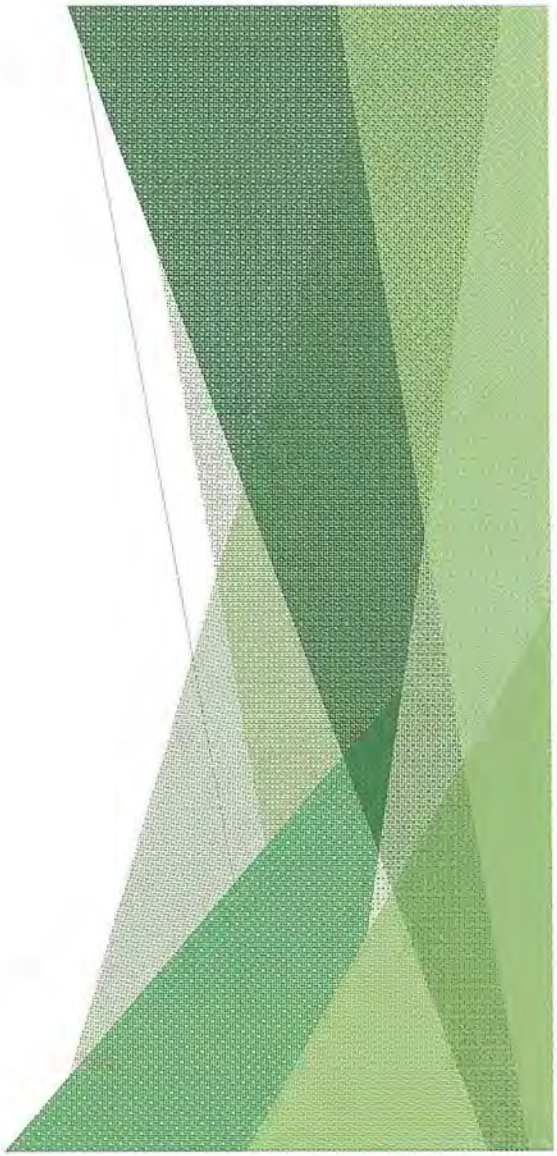
Examples of Governance impacting Decisions

Ability to borrow funds

- Potential to implement new technology
- Impact on project implementation
- Potential partnerships

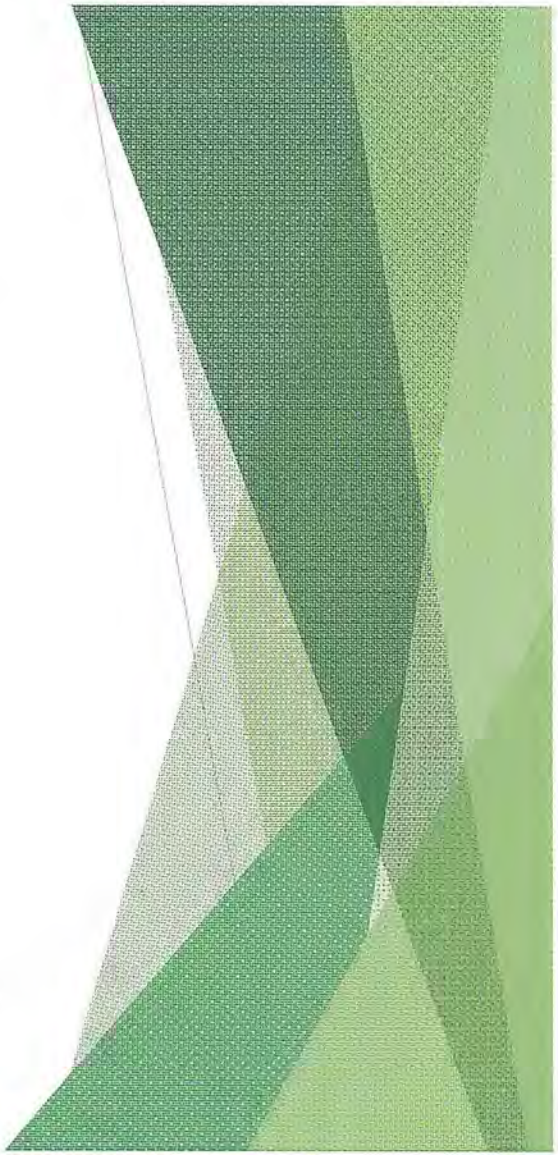
Grants

Risk reduction



Next Steps

- Provide direction to your LDRWMA representative as to your preference for governance option
- At May 15, 2019 Board meeting, Board members will be asked their preference of governance option
- Require unanimous vote to change governance structure



COUNCIL REQUEST FOR DECISION

MEETING DATE:	**May 13, 2019**
SUBMITTED BY:	**Ken Woitt – Director, Planning & Development**
PREPARED BY:	**April Renneberg – Current Planner II**
REPORT TITLE:	**Bylaw No. 1023-2019 (Land Use Bylaw Text Amendments) (2nd & 3rd Readings)**

REPORT SUMMARY

Bylaw 1023-2019 will amend Land Use Bylaw 809-2013 to update and provide clarity to regulations.

RECOMMENDATION

1. That Council give Bylaw 1023-2019 second reading.
2. That Council give Bylaw 1023-2019 third reading.

BACKGROUND

KEY ISSUE(S) / CONTEXT:

Land Use Bylaw 809-2013 regulates and controls the use and development of land and buildings within the City of Leduc. One of the primary goals of the Land Use Bylaw is to create a set of regulations that will enhance the unique character of the City. A Land Use Bylaw is a living document that is constantly under review by administration to ensure the regulations are clear, concise and consistent in their requirements and that improvements and new growth that occur within the City meet the high standards expected of development in Leduc.

The amendments proposed within Bylaw 1023-2019 touch on various sections of the Land Use Bylaw. While they each have a distinct purpose, all work to provide clarity to the language within the Land Use Bylaw. All amendments are outlined in detail within Attachment 2 to this report.

One of the more significant areas of amendment within this proposed bylaw is related to the addition of secondary suite dwelling opportunities within both duplex and townhouse units. Currently, only single detached dwellings may have a secondary suite developed as an accessory use. Through consultation with the development community and other civic departments, it was determined that allowing secondary suites within these other types of dwellings will increase housing affordability while also increasing infill opportunities. A new overlay has been created, cognizant of the restrictions placed on secondary suite development by the Edmonton International Airport Vicinity Protection Area (AVPA) Regulation, to allow secondary suites within duplex and townhouse dwellings for all residential areas below the 30 NEF noise contour. This overlay area is depicted within Attachment 3 to this report. To be considered for approval, a secondary suite must meet all required regulations of the Land Use Bylaw, including the provision for on-site parking for the secondary suite dwelling. Secondary suites will continue to be a discretionary use, requiring additional notification and the ability for residents to appeal the decision to the Subdivision & Development Appeal Board.

LEGISLATION AND/OR POLICY:

1. Municipal Government Act, RSA 2000, Chapter M-26 as amended
   - S. 640(4) outlines all matters a land use bylaw may regulate.
   - S. 606 and S. 692 govern the requirements for advertising a public hearing for a bylaw.
2. Land Use Bylaw 809-2013, as amended

PAST COUNCIL CONSIDERATION:

Bylaw 1023-2019 was given first reading by Council at the regular meeting held April 29, 2019.

CITY OF LEDUC PLANS:

Bylaw 1023-2019 is consistent with the City's Municipal Development Plan, as amended.

IMPLICATIONS OF RECOMMENDATION

ORGANIZATIONAL:

There are no organizational implications.

POLICY:

There are no policy implications.

IMPLEMENTATION / COMMUNICATIONS:

The public hearing was held earlier at this meeting of Council. The hearing was advertised in the April 26 and May 3, 2019 issues of '*The Representative*'.

ALTERNATIVES:

1. That Council amend Bylaw 1023-2019;
2. That Council defeat Bylaw 1023-2019.

ATTACHED REPORTS / DOCUMENTS:

1. Bylaw 1023-2019
2. Rationale for Proposed Amendments
3. Infill Overlay Map

Others Who Have Reviewed this Report

P. Benedetto, City Manager / G. Klenke, City Solicitor / M. Pieters, General Manager, Infrastructure & Planning

AMENDMENT #94 - TO BYLAW NO. 809-2013, THE LAND USE BYLAW

The *Municipal Government Act*, R.S.A. 2000, Chapter M-26, as amended (the "Act") grants a municipality the authority to pass a Land Use Bylaw;

AND: in accordance with the Act, the City of Leduc passed Land Use Bylaw No. 809-2013 to regulate and control the use and Development of land and buildings in the City of Leduc, and the Council has deemed it expedient and necessary to amend Bylaw No. 809-2013;

AND: notice of intention to pass this bylaw has been given and a public hearing has been held in accordance with the Act;

THEREFORE: the Council of the City of Leduc in the Province of Alberta duly assembled hereby enacts as follows:

PART I: APPLICATION

That Bylaw No. 809-2013 be amended as follows:

1. Section 3.4.4.1. is amended by adding "unless the direct control provision specifically says otherwise" to the end of the regulation.

2. Section 8.2 Table 2: Development, Activities and Uses That Do Not Require a Development Permit is amended as follows:
   i) Hard Surfacing is deleted and substituted with:

"Hard Surfacing	RV Parking, assuming it complies with Section 21.8.3, 21.8.4 or 21.8.6, or the Hard Surfacing of any area that is part of a Development for which a Development Permit has been issued, for the purpose of providing vehicle or pedestrian access or parking."

   ii) Stripping Site Grading or Excavation is deleted and substituted with:

"Stripping Site Grading or Excavation	Stripping, Site grading or Excavation that is part of a Development for which a Development Permit has been issued or a development agreement entered into."

3. Section 9.2.2. is amended by replacing 'Policy 61.008' with 'Section 10.5.3.1'.

4. Section 10.3.8. is deleted.

5. Section 11.1.3.1. is amended by adding the following at the end of the section: "Consideration for Secondary Suite Dwelling Development provides intensification opportunities in this District."

6. Section 11.3 Table 4: Single Detached Dwelling in the RSE District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

7. Section 11.5 Table 6: Single Detached Dwelling in the RSD District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16m^2".

APPROVED
As to Form
G. K
City Solicitor

8. Section 11.5 Table 6: Single Detached Dwelling in the RSD District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

9. Section 11.5 Table 7: Duplex Side-By-Side Dwelling in the RSD District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

10. Section 11.5 Table 7: Duplex Side-By-Side Dwelling in the RSD District, Dwelling Density Maximum is amended by deleting "Maximum Dwelling Unit Density of one (1) unit per Parcel" and substituting it with "Two (2) units per Parcel".

11. Section 11.7 Table 9: Single Detached Dwelling in the RNL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

12. Section 11.7 Table 9: Single Detached Dwelling in the RNL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

13. Section 11.8.6 is deleted and substituted with the following:

"11.8.6. Minimum Lot Widths and Lot Areas may be reduced, if a Development complies with Section 11.8.4., as follows:

11.8.6.1. Where the proposed Development has primary access from a Lane, the Lot width may be a minimum of 7.6 m (10.0 m on a Corner Lot), with a minimum Lot area of 258.4 m^2 (340.0 m^2 on a Corner Lot); and

11.8.6.2. Where the proposed Development has primary access from a front street, the Lot width may be a minimum of 9.2 m (11.6 m on a Corner Lot), with a minimum Lot area of 312.8 m^2 (394.4 m^2 on a Corner Lot)."

14. Section 11.9 Table 11: Single Detached Dwelling in the RSL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

15. Section 11.9 Table 11: Single Detached Dwelling in the RSL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

16. Section 11.9 Table 12: Duplex Side-By-Side Dwelling in the RSL District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

17. Section 11.9 Table 12: Duplex Side-By-Side Dwelling in the RSL District, Building Height Maximum is amended by deleting "Two and One Half Storey or 11.0 m" and substituting it with "11.0 m".

18. Section 12.3.2.4. is deleted.

19. Section 12.4 Table 16: Duplex Stacked Dwelling, Triplex Dwelling, and Fourplex Dwelling in the MUR District is amended as follows:

i) The row for Amenity Area is deleted and substituted with:

	Duplex Stacked Dwelling	Triplex Dwelling	Fourplex Dwelling
"Amenity Area (Rear Yard) Minimum (Only applicable For rear detached Garage)	16 m^2	16 m^2	16 m^2"

ii) The row for Building Height Maximum is deleted and substituted with:

	Duplex Stacked Dwelling	Triplex Dwelling	Fourplex Dwelling
"Building Height Maximum	12.0 m	12.0 m	12.0 m"

20. Section 12.4 Table 17: Townhouse Dwelling in the MUR District, Amenity Area is amended by deleting "4.0 m width by 4.0 m length" and substituting it with "16 m^2".

21. Section 12.4 Table 17: Townhouse Dwelling in the MUR District, Building Height Maximum is amended by deleting "Three (3) Storeys and 12.0 m" and substituting it with "12.0 m".

22. Section 12.4 Table 18: Commercial Community Educational & Recreational Uses in the MUR District, Building Height Maximum is amended by deleting "Three (3) Storeys and 12.0 m" and substituting it with "12.0 m".

23. Section 12.7 Table 19: Permitted and Discretionary Land Use Classes MUN – Mixed Use Neighbourhood is amended by substituting discretionary use "Dwelling, Apartment (4 or more Storeys)" with "Dwelling, Apartment (5 or more Storeys)".

24. Section 12.7 Table 20: Apartment Dwelling – One (1) to Four (4) Storeys in the MUN District, Building Height Maximum is amended by deleting "Four (4) Storeys and 17.0 m to provide flexibility for roof designs" and substituting it with "17.0 m".

25. Section 12.10. Table 21: Permitted and Discretionary Land Use Classes MUC – Mixed Use Comprehensive is amended by substituting permitted use "Dwelling, Apartment (4 or more Storeys)" with "Dwelling, Apartment (5 or more Storeys)".

26. Section 12.10. Table 22: Apartment Dwelling – Four (4) or More Storeys in the MUC District be amended by changing the headings from "Apartment Dwelling – Four (4) or more Storeys" to "Apartment Dwelling – Five (5) or more Storeys."

27. Section 12.10. Table 22: Apartment Dwelling – Four (4) to Ten (10) Storeys in the MUC District, Building Height Maximum is amended by deleting "Ten (10) Storeys 33.3 m" and substituting it with "33.3 m".

28. Section 14.5.1.1. is amended by replacing "Industrial, General developments" with "Developments in this district".

29. Section 14.5.1.2. is deleted.

30. Section 14.5.5. is amended by replacing "classed as Industrial – General under this Bylaw where the industrial activity" with "within this district where the business activity".

31. Section 14.8. Table 33.1: Permitted and Discretionary Land Use Classes IBL – Business Light Industrial is amended by adding 'Pet Care Service' as a Permitted Use.

32. Section 14.9. is amended by adding the following sections after 14.9.3.:

"14.9.4. Any Pet Care Service within this district shall be limited to locations south of 65 Avenue.

14.9.5. Adverse Effects or Nuisances for Proposed Development

14.9.5.1. Developments in this district shall not have any significant adverse effect of nuisance created or apparent outside the Principal Building.

14.9.5.2. Buildings that have been brought to the Site prebuilt shall be visually compatible with the Site, in the opinion of the Development Authority, and may require a Development Permit.

14.9.6. Despite Table 33.1: Permitted and Discretionary Land Use Classes IBL – Business Light Industrial, any us within this district where the business activity occurs both inside and outside the Principal Building shall be treated as a Discretionary Use within the IBL land use district."

33. The following section is added after 18.10.4.2.:
"18.11. Infill Overlay

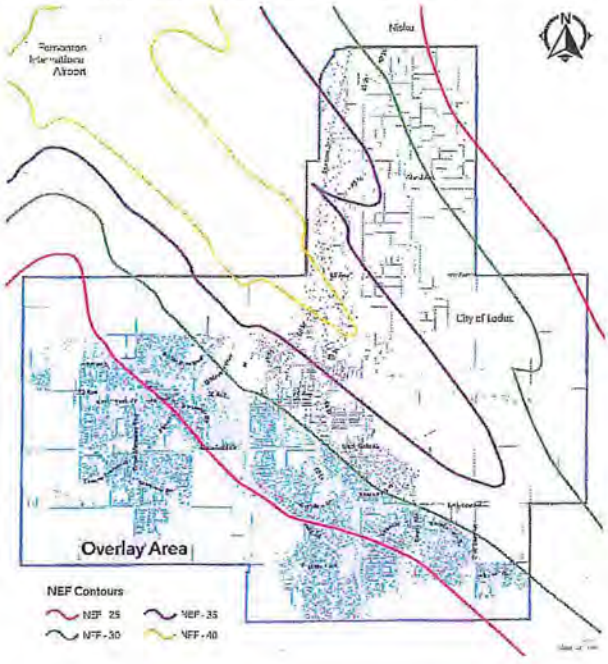
18.11.1. Purpose

18.11.1.1. The purpose of this Overlay is to enable residential infill development and overall densification by allowing alternative residential development opportunities while respecting the regulations imposed by the Edmonton International Airport Vicinity Protection Area (AVPA) Regulation.

18.11.2. Applicability

18.11.2.1. This Overlay shall apply to the area outlined in Figure 3.4: City of Leduc Infill Overlay Area.

Figure 3.4: City of Leduc Infill Overlay



18.11.2.2. In accordance with Schedule 2, Section 3 of the AVPA Regulation, any Parcel bisected by the 30 NEF contour:

1) 0.2 ha or less in size is not subject to this Overlay; or
2) greater than 0.2 ha in size may be subject to this Overlay, subject to Schedule 2, Section 3(2) of the AVPA Regulation.

18.11.3. Interpretation

18.11.3.1. Development within this Overlay shall be evaluated with respect to compliance with the underlying district and all other provisions of this Bylaw where not specifically overridden by this Overlay. In the case of conflicting regulations within this Overlay and other sections of the Land Use Bylaw, interpretation of the applicable regulation is dependent upon the Development Authority's discretion.

18.11.3.2. For the purpose of this Overlay, Dwelling, Secondary Suite shall be defined as follows:
Dwelling, Secondary Suite – means Development consisting of a Dwelling located within, and accessory to, a Structure in which the Principal Use is a Single Detached Dwelling, Duplex Side-by-Side Dwelling or Townhouse Dwelling. A Secondary Suite Dwelling has cooking facilities, sleeping facilities and sanitary facilities which are separate from those of the Principal Dwelling within the Structure. For the purpose of this clause, "cooking facilities" includes any stove, hotplate, oven, microwave oven, toaster oven or electric griddle, as well as any wiring or piping containing the energy or power source for such facilities. A Secondary Suite Dwelling also has an entrance separate from the entrance to the Principal Dwelling, either from a common indoor landing or directly from the exterior of the Structure. A Secondary Suite Dwelling shall not be subject to separation from the Principal Dwelling through a Condominium conversion or Subdivision. This Land Use includes the Development or conversion of existing Basement space or above-Grade space to a separate Dwelling. This Land Use does not include Duplex Stacked Dwelling, Fourplex Dwelling, Triplex Dwelling, Apartment Dwelling, Garage Suite Dwelling, Garden Suite Dwelling, or Boarding Facility.

18.11.4. Land Uses

18.11.4.1. Permitted and Discretionary Uses within this Overlay shall follow those in the underlying Land Use District but shall allow Dwelling, Secondary Suite as a Discretionary Use where the Principal Use is either a Dwelling, Single Detached; Dwelling, Duplex Side-by-Side; or Dwelling, Townhouse.

18.11.5. Site Subdivision Regulations

18.11.5.1. Dwelling Density maximum shall be as follows:

1) Single Detached – maximum 2 Dwelling Units;
2) Duplex Side-by-Side – maximum 4 Dwelling Units; and
3) Townhouse – maximum 12 Dwelling Units."

34. Section 21.1.1.8. is deleted and the following section is substituted:
"21.1.1.8. Accessory Developments are permitted in a district when accessory to a Principal Use for which a Development Permit has been issued."

35. Section 21.1.5. is amended by adding the following new section after Section 21.1.5.1.:
"21.1.5.2. For properties where the Dwelling is approved with a 0 m side yard, the side yard Setback for the attached Deck can also be reduced to 0 m."

36. Section 21.7.2.2 3)(a) is amended by replacing "6.5 m" with "7.1 m".

37. Section 22.5.4. is deleted.

38. Section 24.1.1.12. is deleted and the following section is substituted:
"24.1.1.12. temporary Signs that are required under this Bylaw or for a statutory plan to identify a site with an application in for a proposed Bylaw adoption or amendment;"

39. Section 26.0 Table 48: Glossary of Terms and Uses is amended by striking out "or Education facilities" from the definition for Government Service.

PART II: ENACTMENT

This Bylaw shall come into force and effect when it receives Third Reading and is duly signed.

READ A FIRST TIME IN COUNCIL THIS_____ DAY OF _____, AD 2019.

READ A SECOND TIME IN COUNCIL THIS _____ DAY OF _____, AD 2019.

READ A THIRD TIME IN COUNCIL AND FINALLY PASSED THIS _____ DAY OF _____, AD 2019.

Robert Young
MAYOR

Sandra Davis
CITY CLERK

Date Signed

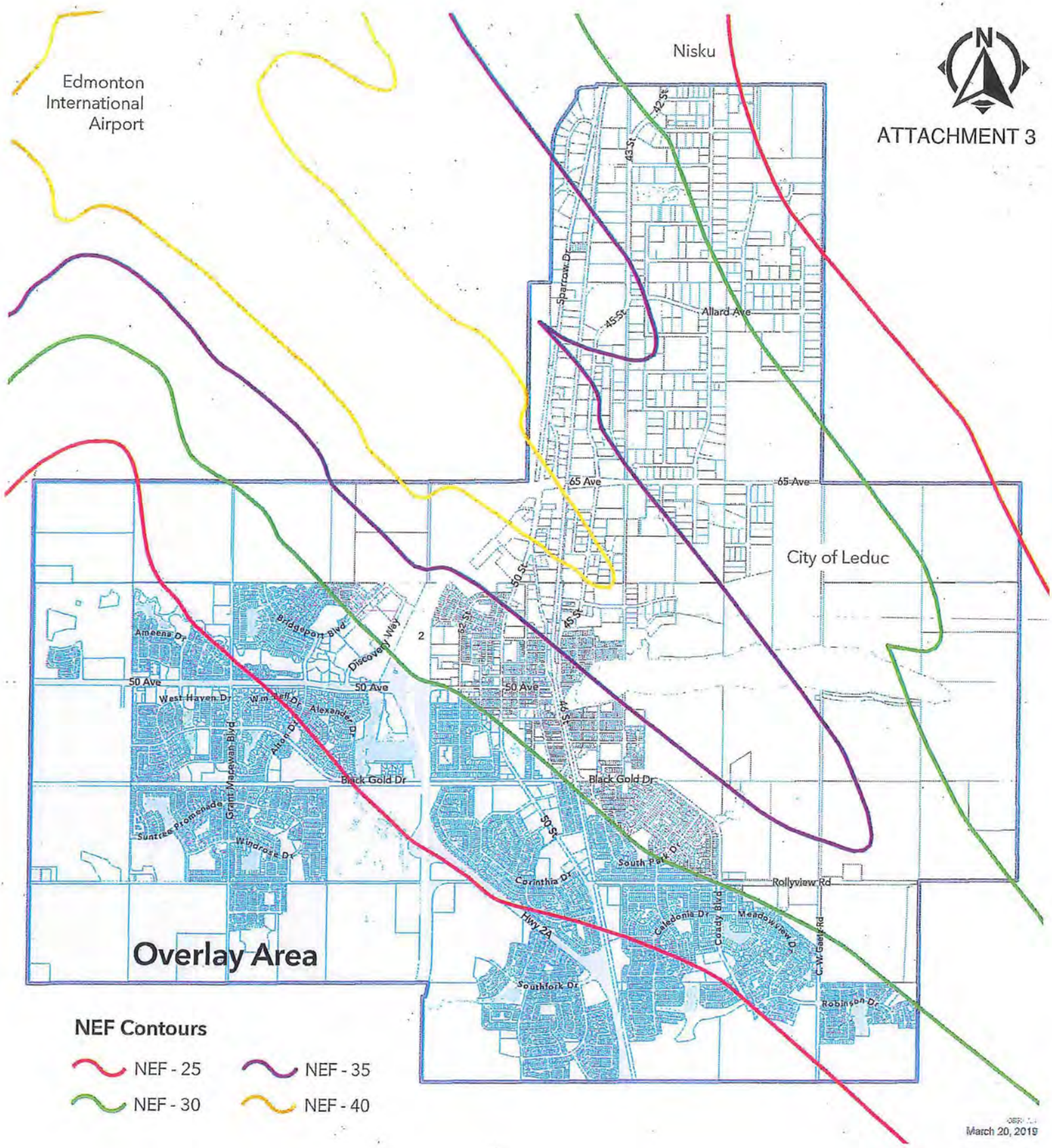
RATIONALE FOR PROPOSED AMENDMENTS ATTACHMENT 2

Section of Bylaw 809-2013	Description of Amendment	Rationale	Bylaw 1023-2019 Amendment Number
3.4.4.1. Establishment of Overlays	Adding wording to increase clarity for simultaneous use of an overlay and a direct control bylaw.	Clarifying how administration can use these two types of regulatory tools.	1
8.2. No Development Permit Required (Table 2)	Include exemptions from requiring a Development Permit for: 1) RV parking compliant with regulations for RV Parking (Section 21.8); and 2) Stripping & Grading activities associated with a signed Development Agreement	1) Driveways are currently exempt from requiring a permit under this section; parking for RVs should be considered similarly 2) Bringing the land use bylaw to reflect current practice	2
9.2.2. Supplementary Requirements for a Development Permit	Updating reference within regulation	Replacing reference to outside policy on notices and advertising with a land use bylaw section reference as policy is out of date.	3
10.3.8. Decision on Development Permit Application	Deleted	Restricting a development to one type of a single use per site is an unnecessary limitation.	4
11.1.3.1. Residential land Use Districts – RNL – Residential Narrow Lot	Add wording around inclusion of secondary suites in purpose statement	Secondary suites have always been a discretionary use in all residential districts with single detached dwellings. The purpose statement should reflect this, similar to other district's purpose statements. This can be used as support during development appeals.	5
11.3. 11.5. 11.7. 11.9. 12.4. 12.7. 12.10.	Updating height regulation to remove measurement by 'storeys' in RSE, RSD, RNL, RSL, MUR, MUN and MUC land use districts.	Current height regulation limits height by both metres and storeys which is contradictory.	6, 8, 9, 12, 15, 17, 19, 21, 22, 24, 27
11.5. 11.7. 11.9. 12.4.	Updating amenity area regulation to reflect area in square metres in RSD, RNL, RSL and MUR land use districts.	Current regulation provides a measured amenity area of 4.0 m x 4.0 m – we do not want to restrict the dimensions of the area, only ensure that adequate space is provided.	7, 11, 14, 16, 19, 20

Section of Bylaw 809-2013	Description of Amendment	Rationale	Bylaw 1023-2019 Amendment Number
11.5. RSD – Residential Standard District (Table 7)	Increase dwelling density maximum from one unit to two	To correct an error – duplexes can be developed on a single lot, therefore having a density of two dwellings.	10
11.8.6. Specific Development Regulations for RNL	Add minimum lot area regulation for zero lot line developments based on their varying dimensions	To correct an error – minimum lot area should have been added when regulations were created.	13
12.3.2.4. Site Planning and Design Standards for Mixed-Use Districts	Deleted	Group homes and home occupations must meet other regulations, whether municipal or provincial, and should not be regulated by the type of dwelling.	18
12.7 (Table 19) 12.10 (Table 21) 12.10 (Table 22)	Amend use to be "Dwelling, Apartment (5 or more storeys)"	Currently a 4-storey apartment could be considered under two use categories – "Dwelling, Apartment (1-4 Storeys)" and "Dwelling, Apartment (4 or more Storeys)". The change proposed better distinguishes between these uses.	23, 25, 26
14.5.1.1. 14.5.5.	Change wording to regulate all uses within the district rather than just one specific use (Industrial, General) within the Light Industrial district	'Industrial, General' is no longer a use (was amended by Bylaw 940-2016) so both regulations are being updated to include all uses developed within the IL district	28, 30
14.5.1.2.	Deleted	Duplication of 14.5.4.1 (prebuilt buildings)	29
14.8. 14.9.4	Add 'Pet Care Service' as a permitted use in the Business Light Industrial (IBL) land use district for those areas south of 65 Avenue	A land use study was conducted by the Planning & Development department late 2018 which initiated the redistricting of the commercial area around 46A Street/61 Avenue from GC to IBL. Through this study it was determined that Pet Care Service would be an acceptable use within the IBL district provided it is located far enough from the Special Industrial district where industrial risks are greatest. This corrects a non-conforming use created through said redistricting.	31, 32
14.9.5. 14.9.6.	Addition of specific development regulations to Business Light Industrial land use district	Helps regulate tidy and respectful development throughout the IBL district.	32

Section of Bylaw 809-2013	Description of Amendment	Rationale	Bylaw 1023-2019 Amendment Number
18.11.	Addition of Infill Overlay map and regulations to allow secondary suites within duplexes and townhouses southwest of the 30 NEF contour under the AVPA.	Currently, only single detached dwellings may have a secondary suite developed as an accessory use. Through consultation with the development community and other civic departments, it was determined that allowing secondary suites within these additional types of dwellings will increase housing affordability while also increasing infill opportunities. A new overlay has been created, cognizant of the restrictions placed on secondary suite development by the AVPA Regulation above the 30 NEF noise contour to allow secondary suites to be considered within single detached, duplex and townhouse dwellings.	33
21.1.1.8.	Change wording to better reflect accessory developments being allowed with all types of approved development	Clarify regulation – Current wording is unclear and seems to say that accessory developments are only allowed if the principal use is a permitted use. Accessory developments are allowed with any principal use on a lot, regardless if it was permitted or discretionary.	34
21.1.5.2.	Addition of regulation allowing decks with a zero lot line development to also be constructed on the zero lot side.	To reflect current practice	35
21.7.2.2(3)(a)	Increase height maximum of Garage Suite Dwellings from 6.5 m to 7.1 m	Better reflects actual liveable space within a suite above a garage.	36
22.5.4.	Deleted	No reason to require multi-unit developments to engage in consultation with the City for their landscaping prior to application – administration works with them through the process as needed, as with all aspects of development.	37
24.1.1.12.	Addition of exemption from Development Permit for signs required by City processes for planning applications	Signs related to other planning applications received by the City are typically erected in the road right-of-way and are only up for a short duration prior to the event (ex. Open House signs for a new Area Structure Plan). These should not require a development permit.	38
26.0 (Table 48)	Removing reference to "education facility" from definition for Government Service	Removal for clarity as we do not have a definition for an education facility nor is it listed as a use in any land use district.	39

ATTACHMENT 3



March 20, 2019

Tamani®
COMMUNITIES

April 15, 2019

The City of Leduc
1 Alexandra Park
Leduc, AB, T9E 4C4

Attn: Ms. April Renneberg, RPP, MCIP
Current Planner II

Re: Letter of Support – Secondary Suites

Dear April,

We are pleased to submit this letter of support for the City of Leduc's recent initiative to introduce the potential of secondary suites as a discretionary use for various land uses in the City of Leduc.

Given the current economic climate, allowing potential homebuyers this level of flexibility increases market interest and expands our capabilities to help grow the city, resulting in more people calling Leduc home.

Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Regards,

Tamani Communities

Per. Sameer Remtulla, **P.Eng.**
Development Manager

200, 3132 - 118 AVENUE SE, CALGARY, AB T2Z 3X1 phone 403.723.8446 fax 403.212.0161

IN-CAMERA ITEMS

Accord Interim Update for May 2019

Exception to Disclosure - Section 21, 24 & 25 of the FOIP Act

Office of Mayor Young

Mayor's Report

April 22 – May 5, 2019

April 23
- Developer Surety Bonds
- Mayor's Connect video shoot
- B Balaba (Uganda)
- Leduc Golf Club

April 24
- Regional Transit Commission luncheon

April 25
- Nisku-Leduc Rotary | City Update
- DARE (Drug Abuse Resistance Education) Graduation
- Airport Accord Oversight Committee briefing
- Leduc Wildlife Conservation Society

April 26
- I Sasyniuk, General Manager, Corporate Services weekly update
- Airport Accord Oversight Committee
- 5th Annual Karma Concerts Cabaret

April 29
- Communications & Marketing Services update
- Briefing with City Manager
- Council Liaison Meeting w Corporate Services
- Committee-of-the-Whole and Council agenda review
- Committee-of-the-Whole
- Council

April 30
- Interview | Incite Strategy
- J Kamlah, Director Recreation Services and Councillor G Finstad

May 1
- Mock Council | Covenant Christian School
- Guest Reader @ Education Week, Father Leduc Catholic School
- Caledonia's 2019 Art Show!
- Provincial Sport Tourism conference | Opening Networking Reception

May 2
- EMRB SISB Strategic Intent Session #2
- Provincial Sport Tourism conference

May 3
- NAIT's 56th Convocation
- Mock Council | Father Leduc Catholic School
- I Sasyniuk, General Manager, Corporate Services weekly update

Approved by Mayor Bob Young

"Original Signed by Mayor B. Young"

Building Permit Detail Summary

April 1, 2019-April 30, 2019 (inclusive)

Commercial							
Permit	**Type of Work**	**Builder**	**Units**	**Area**	**Valuation**	**Tax Roll**	**PID**
PRBD201900567 (Issued-17/04/2019)	Alteration and improvements	SEVEN BAR PROPERTIES LTD		Corinthia Park	$75,000.00	006343	2815
PRBD201900647 (Issued-05/04/2019)	Alteration and improvements	The Light House Cowork Corp		Central Business District	$25,000.00	010249	1014
Subtotal	**2**				**$100,000.00**		
Duplex Dwelling							
Permit	**Type of Work**	**Builder**	**Units**	**Area**	**Valuation**	**Tax Roll**	**PID**
PRBD201900633 (Issued-17/04/2019)	New Construction - Duplex	LIVE BETTER HOMES LTD	1	Robinson	$350,200.00	019028	17736
PRBD201900634 (Issued-17/04/2019)	New Construction - Duplex	LIVE BETTER HOMES LTD	1	Robinson	$344,000.00	019029	17737
Subtotal	**2**		**2**		**$694,200.00**		
Industrial							
Permit	**Type of Work**	**Builder**	**Units**	**Area**	**Valuation**	**Tax Roll**	**PID**
PRBD201801142 (Issued-17/04/2019)	New Construction - Industrial Building	ELITE REAL ESTATE HOLDINGS LTD		Northwest Commerical	$2,121,000.00	017251	15810
PRBD201900591 (Issued-15/04/2019)	Accessory Structure - Sea Container	Canwest Concrete Cutting & Coring Inc.		Leduc Business Park	$8,400.00	015078	13549
PRBD201900715 (Issued-12/04/2019)	Alteration and improvements	EAGLE BUILDERS LP		Leduc Business Park	$814,462.00	019075	17793
Subtotal	**3**				**$2,943,862.00**		
Other Residential							
Permit	**Type of Work**	**Builder**	**Units**	**Area**	**Valuation**	**Tax Roll**	**PID**
PRBD201900520 (Issued-05/04/2019)	Secondary suite	DOYLE KEVIN B	1	Corinthia Park	$50,000.00	005863	3817
PRBD201900522 (Issued-05/04/2019)	Basement Development	KUSHNERYK CORINNE		Meadowview Park	$33,000.00	019122	17855
PRBD201900629 (Issued-02/04/2019)	Accessory Structure - Detached Garage	LECLEIR JAMES		Linsford Park	$2,000.00	009080	2492
PRBD201900635 (Issued-04/04/2019)	Accessory Structure - Detached Garage	ENCORE MASTER BUILDER INC.		West Haven	$20,000.00	019909	21738

Building Permit Detail Summary

April 1, 2019-April 30, 2019 (inclusive)

PRBD201900638 (Finaled-04/04/2019)	Accessory Structure - Deck Uncovered	CURTIS GRANT F		Bridgeport	$10,000.00	008148	8037
PRBD201900646 (Finaled-05/04/2019)	Wood Stove/fireplace	Mardel Construction Ltd/ Paul Davis of Edmonton		Willow Park	$7,500.00	010849	274
PRBD201900698 (Issued-10/04/2019)	Basement Development	Smeltzer Kyle		Southfork	$30,000.00	018275	16936
PRBD201900704 (Issued-10/04/2019)	Accessory Structure - Deck Uncovered	R & R Stewart General Contracting Services Inc.		Robinson	$5,000.00	017988	16641
PRBD201900708 (Issued-01/04/2019)	Accessory Structure - Pergola	R & R Stewart General Contracting Services Inc.		Robinson	$12,000.00	019010	17718
PRBD201900717 (Issued-11/04/2019)	Accessory Structure - Detached Garage	MSL PROJECTS & DESIGN INC		Caledonia Park	$15,000.00	008723	5050
PRBD201900734 (Issued-05/04/2019)	Basement Development	SPARROW JEREMY A		Meadowview Park	$20,000.00	018782	17473
PRBD201900735 (Issued-12/04/2019)	Accessory Structure - Deck Uncovered	SAWATZKY JEFFREY BRYAN		Deer Valley	$5,000.00	013793	12190
PRBD201900743 (Issued-11/04/2019)	Basement Development	AREO HOMES PVT LTD		West Haven	$52,000.00	017964	16607
PRBD201900747 (Issued-12/04/2019)	Accessory Structure - Deck Uncovered	PALSENBARG NICHOLAS		Tribute	$8,000.00	011980	10268
PRBD201900750 (Issued-29/04/2019)	Secondary suite	HOMES BY AVI (EDMONTON) LP	1	Southfork	$50,000.00	020212	21979
PRBD201900755 (Issued-11/04/2019)	Accessory Structure - Deck Uncovered	NYANGA NANYUMBA J		Meadowview Park	$2,500.00	018819	17512
PRBD201900758 (Issued-26/04/2019)	Secondary suite	CRANSTON HOMES LTD	1	Black Stone	$25,000.00	020354	22293
PRBD201900759 (Issued-15/04/2019)	Basement Development	FRIESEN ANNA		Suntree	$16,000.00	012300	10656
PRBD201900762 (Issued-25/04/2019)	Secondary suite	CRANSTON HOMES LTD	1	Black Stone	$25,000.00	020340	22279
PRBD201900764 (Issued-16/04/2019)	Accessory Structure - Detached Garage	ASAP GARAGE BUILDERS INC		Suntree	$12,390.00	013913	12328
PRBD201900779 (Issued-12/04/2019)	Demolition - Detached Garage	HARANGOZO CHARLES		Caledonia Park	$5,000.00	006604	4345

Building Permit Detail Summary

April 1, 2019-April 30, 2019 (inclusive)

PRBD201900787 (Issued-26/04/2019)	Accessory Structure - Detached Garage	CRANSTON HOMES LTD		Meadowview Park	$15,000.00	018858	17551
PRBD201900812 (Issued-24/04/2019)	Basement Development	STEVENSON CODY J		Robinson	$28,000.00	016777	15294
PRBD201900829 (Issued-25/04/2019)	Basement Development	WATSON LEE D		Tribute	$30,000.00	015305	13763
PRBD201900846 (Issued-29/04/2019)	Basement Development	MSL PROJECTS & DESIGN INC		Meadowview Park	$16,000.00	007544	8000
PRBD201900916 (Issued-26/04/2019)	Accessory Structure - Deck Uncovered	MCANDREW JULIANNE K		Deer Valley	$5,000.00	014223	12655
Subtotal	**26**		**4**		**$499,390.00**		
Single Detached Dwelling							
Permit	**Type of Work**	**Builder**	**Units**	**Area**	**Valuation**	**Tax Roll**	**PID**
PRBD201900587 (Issued-02/04/2019)	New Construction - Single Detached Dwelling	CRANSTON HOMES LTD	1	Black Stone	$318,000.00	020370	22309
PRBD201900592 (Issued-04/04/2019)	New Construction - Single Detached Dwelling	CRANSTON HOMES LTD	1	Black Stone	$295,000.00	020341	22280
PRBD201900614 (Issued-04/04/2019)	New Construction - Single Detached Dwelling	CRANSTON HOMES LTD	1	Black Stone	$297,000.00	020342	22281
PRBD201900637 (Issued-05/04/2019)	New Construction - Single Detached Dwelling	Prominent Homes Edmonton Ltd	1	Deer Valley	$386,000.00	019764	21452
PRBD201900662 (Issued-11/04/2019)	New Construction - Single Detached Dwelling	ART CUSTOM HOMES INC	1	Meadowview Park	$371,000.00	018427	17090
PRBD201900692 (Issued-09/04/2019)	New Construction - Single Detached Dwelling	HOMES BY AVI (EDMONTON) LP	1	Southfork	$394,000.00	020213	21980
PRBD201900730 (Issued-12/04/2019)	New Construction - Single Detached Dwelling	HOMES BY AVI (EDMONTON) LP	1	Southfork	$486,306.00	020212	21979
PRBD201900731 (Issued-25/04/2019)	New Construction - Single Detached Dwelling	Prominent Homes Edmonton Ltd	1	Black Stone	$364,000.00	020278	22111
PRBD201900733 (Issued-02/04/2019)	New Construction - Single Detached Dwelling	VICTORY HOMES LTD	1	Meadowview Park	$455,000.00	019103	17836
PRBD201900796 (Issued-30/04/2019)	New Construction - Single Detached Dwelling	Pacesetter Homes Partnership	1	Meadowview Park	$453,250.00	018778	17469
PRBD201900875 (Issued-18/04/2019)	New Construction - Single Detached Dwelling	HOMES BY SHER-BILT INC	1	Meadowview Park	$727,000.00	019128	17861

Building Permit Detail Summary

April 1, 2019-April 30, 2019 (inclusive)

PRBD201900942 (Issued-18/04/2019)	New Construction - Single Detached Dwelling	VICTORY HOMES LTD	1	Meadowview Park	$452,000.00	018862	17555
PRBD201900955 (Issued-24/04/2019)	New Construction - Single Detached Dwelling	Prominent Homes Edmonton Ltd	1	Black Stone	$308,000.00	020361	22300
Subtotal	**13**		**13**		**$5,306,556.00**		
Total	**46**		**19**		**$9,544,008.00**		

TOTAL RESIDENTIAL UNITS COMPARISON OF 2019 TO 2018

YEAR 2019	Single Family	Duplex (side by side and up & down)	Multi Family (3-plex, 4-plex, townhouse, rowhousing and apartments	Secondary Suites
	No. of Units	No. of Units	No. of Units	No. of Units
January	6	0	0	8
February	10	2	0	3
March	16	2	0	4
April	13	2	0	4
May				
June				
July				
August				
September				
October				
November				
December				
Year-to-date Totals	45	6	0	19

YEAR 2018	Single Family	Duplex (side by side and up & down)	Multi Family (3-plex, 4-plex, townhouse, rowhousing and apartments
	No. of Units	No. of Units	No. of Units
January	25	4	4
February	23	3	0
March	19	2	8
April	17	16	0
May			
June			
July			
August			
September			
October			
November			
December			
Year-to-date Totals	84	25	12

TOTAL PERMIT VALUE COMPARISON OF 2019 TO 2018

Year 2019	Residential Permits	Commercial Permits	Institutional Permits	Industrial Permits	Total of all Building Permits
January	$ 3,104,500.00	$ 598,936.00	$ 45,000.00	$ 4,988,000.00	$ 8,736,436.00
Feburary	$ 4,713,250.00	$ 266,982.66	$ 270,000.00	$ 80,000.00	$ 5,330,232.66
March	$ 6,835,444.00	$ 35,000.00	$ -	$ -	$ 6,870,444.00
April	$ 6,500,146.00	$ 100,000.00	$ -	$ 2,943,862.00	$ 9,544,008.00
May					
June					
July					
August					
September					
October					
November					
December					
Year-to-date Totals	**$ 21,153,340.00**	**$ 1,000,918.66**	**$ 315,000.00**	**$ 8,011,862.00**	**$ 30,481,120.66**

Year 2018	Residential Permits	Commercial Permits	Institutional Permits	Industrial Permits	Total of all Building Permits
January	$ 11,972,203.59	$ 803,000.00	$ -	$ 240,207.00	$ 13,015,410.59
Feburary	$ 10,816,251.42	$ 235,000.00	$ 400,000.00	$ 10,000.00	$ 11,461,251.42
March	$ 10,585,472.33	$ 8,000.00	$ -	$ -	$ 10,593,472.33
April	$ 11,218,088.00	$ 73,000.00	$ 156,600.00	$ 309,000.00	$ 11,756,688.00
May					
June					
July					
August					
September					
October					
November					
December					
Year-to-date Totals	**$ 44,592,015.34**	**$ 1,119,000.00**	**$ 556,600.00**	**$ 559,207.00**	**$ 46,826,822.34**

April 2019 - Newly Issued Business Licences

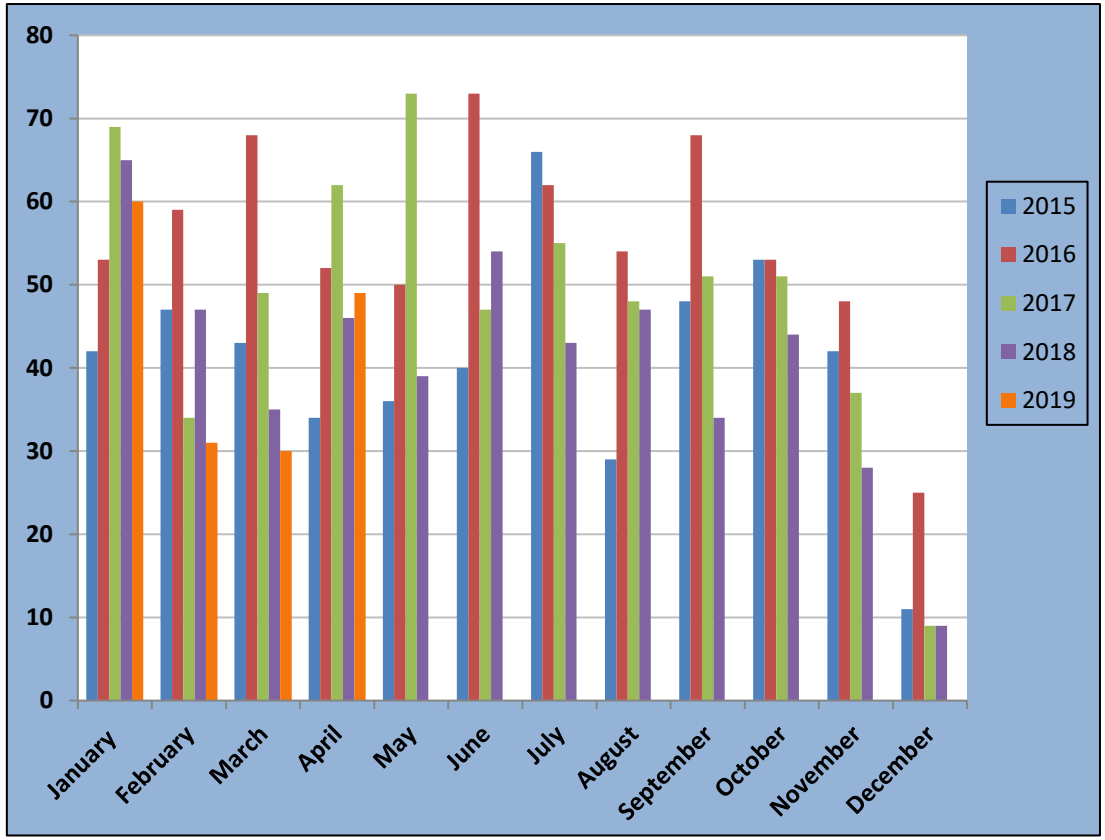
License #	Business Name	Address	Activity	Contact	Category	TaxRoll
LCC201801766	REMI RIDGE CONSTRUCTION	4507 53 AVE, Leduc, AB	CONSTRUCTION	7809517602	Home Based	010680
LCB201801956	FOR PAWS LTD	5009 50 AVE, Leduc, AB	DOG GROOMING	7809805327	General	010268
LCC201900029	COMPASS CONCRETE SOLUTIONS	3906 82 AVE, Unit:103, Leduc, AB	CONCRETE CUTTING/ CONSTRUCTION	7804137111	General	017101
LCC201900189	Canwest Concrete Cutting & Coring Inc.	7100 42 ST, Leduc, AB	CONCRETE CUTTING	7804155599	General	015078
LCB201900245	FANCY FINGERS BY DONNA	5906 50 ST, Unit:1, Leduc, AB	ESTHETICS	7809865044	General	010339
LCB201900264	EducAid Training Services	100 DEER VALLEY DR, Leduc, AB	Provides training (professional development)	7809405656	General	014186
LCC201900317	KEN'S SIGNS		Sign manufacturing and installation	7809933138	Non-Resident	
LCB201900322	Intelligent Data Solutions Inc. (IDS)	6623 44 ST, Leduc, AB	NDE Oil & Gas Inspection Services; Data Management	7804383800	General	009381
LCB201900324	GLOSS NAIL STUDIO	4720 50 AVE, Leduc, AB	ESTHETICS SALON	7802922723	General	010240
LCB201900357	RED DOOR ESTHETICS	4720 50 AVE, Leduc, AB	ESTHETICS	5879889880	General	010240
LCB201900363	ARMOR LOCK & SAFE LTD	6527 SPARROW DR, Unit:105	LOCKSMITH	7809809131	General	008087
LCB201900372	Dynamic Crane Solutions Inc.	4511 41 AVE, Leduc, AB	Overhead crane service and inspection	5877833149	Home Based	008696
LCB201900415	Gem's Cleaning Services	51 HAIDA AVE, Leduc, AB	CLEANING SERVICES	7808863991	Home Based	006465
LCC201900431	UNIFIED PLUMBING & HEATING INC.	5512 45 ST, Unit:122, Leduc, AB	COMMERCIAL MECHANICAL CONTRACTOR	5873379424	General	
LCB201900437	Roger Villa Tax & Bookkeeping Services	24 BIRCHGLEN CRES, Leduc, AB	Bookkeeping & Accounting	7802455830	Home Based	012773
LCB201900440	ROBINSON CONTROLS INC.	7609 SPARROW DR, Unit:104	MANUFACTURER & SALES - ELECTRICAL PRESSURE SWITCH	7804355195	General	017356
LCB201900445	NGUYEN SCOTT LLP	5220 50 ST, Leduc, AB	CHARTERED PROFESSIONAL ACCOUNTANTS	7804585479	General	
LCC201900451	CPL RENOVATIONS	4806 48 AVE, Unit:510, Leduc, AB	RENOVATIONS	7803188256	Home Based	012247
LCB201900465	JPMT Consulting	26 SWEETBERRY COVE, Leduc, AB	Truck transportion compliance and safety consulting	7807828544	Home Based	014679
LCB201900466	The Wandering Bar	190 SOUTHFORK DR, Leduc, AB	Mobile bar business (customers rent trailer)	7809040645	Home Based	018904
LCB201900471	CAREFREE RV	7508 SPARROW DR, Leduc, AB	RV SALES	7804382008	General	008105
LCB201900481	SPURS AND LACE WESTERN WEAR	212 KIRPATRICK WAY, Leduc, AB	RETAIL CLOTHING STORE	5879207202	Home Based	018123
LCB201900482	WMC2 JANITORIAL	60 CAMPBELL RD, Leduc, AB	MEDICAL OFFICE JANITORIAL	7802981973	Home Based	007827
LCB201900487	TURNABOUT LASER THERAPY INC.	5906 50 ST, Unit:4, Leduc, AB	PERSONAL CARE SERVICE (therapeutic laser therapy)	7809077953	General	010342
LCB201900489	Small Creeations Day Spa	4807 48 ST, Leduc, AB	Esthetics: waxing, gel nails, pedicure, manicure	7802397847	General	010115
LCB201900493	HOFER QUALITY CLEANING		CLEANING SERVICES	7808788697	Non-Resident	
LCC201900494	Kelsey Demer		Electrical Contractor	7804462952	Non-Resident	
LCB201900496	VENGER GROUP LTD	6625 45 ST, Leduc, AB	OFFICE ADMINISTRATION - REFRIGERATION REFURBISHMENT	7809800242	General	009501
LCB201900497	End That Lie		Crisis management consulting & anti-defamation services.	5879890111	Non-Resident	
LCB201900500	Maligne Consulting	59 BIRCHGLEN CRES, Leduc, AB	Design and Consulting Services for Oilfield and Waste Water.	7809043524	Home Based	013521
LCC201900501	MODERN CONTRACTING LTD		CONSTRUCTION	7806684544	Non-Resident	
LCB201900509	Brows & Bliss Inc	5906 50 ST, Unit:1, Leduc, AB	Beauty Salon: microblading, lash extensions, facials, henna	7809956775	General	010339
LCB201900511	Knotty Bob's Handcrafted Woodworking	4801 44 ST, Leduc, AB	Handcrafted Woodworking - Hello Local Market	7805423856	Mobile	007002
LCB201900513	BOSS PIZZA & PEPPER	101 SANDALWOOD PL, Unit:2	PIZZA & ITALIAN FOOD	7802573535	General	018209
LCC201900515	Nomis & Son Home Improvement	4206 44A ST, Leduc, AB	Handyman Services	8259951012	Home Based	009391

April 2019 - Newly Issued Business Licences

LCC201900516	LAKHVINDER BACHHAL		Electrical Services	7809383441	Non-Resident	
LCB201900517	Painted Parrot Facepainting	109 CAMELOT AVE, Leduc, AB	Children's facepainting	5873402000	Home Based	006146
LCB201900525	DJ K ROCK SOUND & LIGHTING SERVICES	5508 52 ST, Leduc, AB	DJ MUSIC SERVICE	5873376899	Home Based	010638
LCC201900526	Greg Sharman Renovations		Various renovation services (framing, drywall, painting)	7808983866	Non-Resident	
LCB201900535	CARSTAR Leduc North	7121 SPARROW DR, Unit:1	Autobody repair	7809401651	General	008101
LCB201900539	AAA Precision Machine	3910 84 AVE, Unit:210, Leduc, AB	Machine Shop	7803601424	General	011676
LCB201900558	OK Tire Leduc	4706 51 AVE, Leduc, AB	Automotive Repairs and Tire Service	7806998473	General	010406
LCC201900566	Western Gym & Recreational Supplies Ltd.		Supply, Service and Installation of Nevco LED Scoreboards	4032870233	Non-Resident	
LCB201900571	MICHELLE RICE	16 MCKENZIE CLOSE, Leduc, AB	RESIDENTIAL CLEANING	7802388939	Home Based	018395
LCC201900572	SABRE ELECTRIC LTD		ELECTRICAL CONTRACTOR	7804622889	Non-Resident	
LCB201900574	BUBBA'S BLANKETS & CREATIONS	3404 44 ST, Leduc, AB	Make Therapeutic Weighted Blankets	7809150284	Home Based	009303
LCC201900576	ANDREW (DREW) MAIR		Electrical / Solar Contractor	7804996831	Non-Resident	
LCB201900579	WALLFLOWER HOME & GARDEN	4801 44 ST, Leduc, AB	Art & Home Décor - Hello Local Market	7802887907	Mobile	007002
LCC201900588	ZONE GARAGE EDMONTON		FLOOR COATING & GARAGE ORGANIZATION	7809996836	Non-Resident	
TOTAL	**49**					

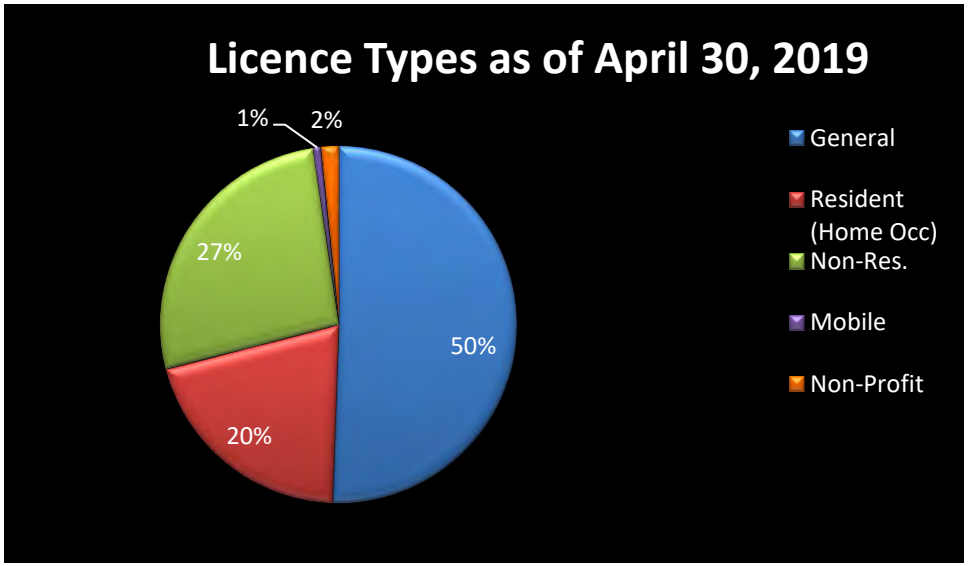
Newly Issued Business Licences
Comparison by Year

	2015	2016	2017	2018	2019
January	42	53	69	65	60
February	47	59	34	47	31
March	43	68	49	35	30
April	34	52	62	46	49
May	36	50	73	39	
June	40	73	47	54	
July	66	62	55	43	
August	29	54	48	47	
September	48	68	51	34	
October	53	53	51	44	
November	42	48	37	28	
December	11	25	9	9	
Total	**491**	**665**	**585**	**491**	**170**



Current Licence Types

	General	Resident (	Non-Res.	Mobile	Non-Profit	Total
January	778	289	376	6	19	**1468**
February	885	335	424	7	26	**1677**
March	923	363	467	8	30	**1791**
April	944	381	499	13	30	**1867**
May						**0**
June						**0**
July						**0**
August						**0**
September						**0**
October						**0**
November						**0**
December						**0**



2015 Year End for Comparison

Total	936	371	840	41	15	2203

2016 Year End for Comparison

Total	971	403	809	44	23	2250

2017 Year End for Comparison

Total	972	405	895	23	30	2325

2018 Year End for Comparison

Total	999	413	860	48	29	2349