THE CITY OF
Red Deer

Environmental Master Plan 2018 Annual Report:
Abridged Reporting on Benchmarks and Metrics
Environmental Master Plan Refresh Underway (2017-2019)

(January to December 2018)

Annual Report Produced: August 2019
Compiled By: Environmental Initiatives, ENVS

Environmental Master Plan 2018 Annual Report:
Reporting on Benchmarks and Metrics

Introduction

In 2011 Red Deer City Council adopted the Environmental Master Plan (EMP), as a planning tool to guide both The City and the community. In it, Red Deer recognizes that its history, settlement, and success as a municipality, are closely interwoven with its natural environment. Based on this, protecting and improving the environment for the benefit of all are at the core of the EMP. The EMP was written as a long term, 25 year roadmap towards improved environmental performance. It is also the environmental pillar of Red Deer's Municipal Sustainability Framework. Red Deer's progress and achievements in reaching goals set in the EMP are important for the community and the municipality to identify, monitor, and build upon. While not a mandated Plan, the EMP provides forward thinking towards improved environmental sustainability and sets Red Deer's environmental vision.

Vision: Red Deer actively enhances its rich natural environment and minimizes its ecological footprint through City leadership, community collaboration and active stewardship. Red Deer is a leading example of a resilient and sustainable community in which urban and natural systems are effectively integrated to the benefit of both.
Environmental Master Plan, 2011

In 2018, Red Deer began roll out of a cart system, aimed at supporting waste reduction and diversion. The roll out included public outreach at Red Deer's spring Home Show.

Each year since adopting the EMP, The City of Red Deer has produced an annual report to share information and track EMP implementation progress.

The 2018 annual report outlines progress within the last year, identifies successful partnerships under the plan, and seeks to contribute to overall continued environmental momentum.

The report for 2018 marks a significant milestone. It will be the final annual report under the original 2011 EMP. In 2019, The City of Red Deer will adopt an update to the Environmental Master Plan. The vison will remain unchanged and the plan will continue to be a guiding document; but its metrics, targets, and actions will be refreshed, updated and renewed to reflect our community as it is today and moving into the future. With the renewed plan will come a renewed annual report, likely to look different or be delivered in a new format. However, the intent will remain the same – to ensure that Red Deer is tracking environmental progress and transparently sharing results as part of its commitment to environmental sustainability and resiliency. The City is excited for an updated EMP but at the same time proud of the achievements and progress over the past seven years under the 2011 Plan.

The Plan's Focus Areas

The EMP is structured into seven focus areas: Water, Ecology, Transportation, Built Environment, Air, Energy, and Waste. Each focus area established a goal along with either two, three, or four metrics to measure progress towards this goal. The metrics include targets to quantify and drive progress. All total, the Plan contains 20 metrics; each had short term, medium

term, and longer term targets for the 25 year life of the plan. This current report presents progress towards the medium term targets. It lists results for the 2018 calendar year alongside the 2017 results, for year to year comparative purposes.

Next Level Plans

In order to support the city's sustainability objectives, The EMP contains recommendations for subject areas or topics that needed more specific, detailed work than the Plan itself provided. As a result, under the wider umbrella of the EMP, several stand-alone "next level" plans have been developed and implemented. The plans developed out of the EMP include: a Greening the Fleet strategy, the Waste Management Master Plan update, The City of Red Deer 2010 Corporate Greenhouse Gas Inventory, Downtown Red Deer's Investment Attraction Plan (DIAP), the Urban Forest Management Plan, and a Community Energy and Emissions Plan (CEEP) looking at community greenhouse gas emissions reduction. The 2018 EMP Annual Report includes updates on these plans, and in some cases presents an annual update report with details on the ways in which the next level plan is tackling initiatives and implementation targets. All of which link back to the EMP. These annual updates (where applicable) can be found in the appendices of this report.

Why Produce a Yearly Report?

The EMP was approved as a planning tool to support environmental action in Red Deer. To determine if the work being undertaken is effective it is important that progress be tracked over time. The Annual Report helps both The City of Red Deer and community members identify accomplishments so that these can be used as a foundation for further advancements. It also recognizes the things that may need to be reconsidered or reset where progress is not moving ahead in the way needed. As has been done yearly since the Plan's adoption, The City will be sharing Annual Report results not just in the form of this detailed document but also as a report card to the community available on The City website.

Results Reporting

To support understanding of the condition of our environment, the EMP Annual Report records and tracks progress on metrics and targets for the plan's 20 metrics. This data is detailed in *Table A: 2018 Report on Metrics and Measures*.
In most cases the following information is noted:

- The 2009 baseline measure (some baselines are for a later year in instances where data was not available or had to be collected and tabulated),

- The 2017 results – as reported in the previous year's Annual Report for comparative purposes
- The 2018 results – being released here as part of this year's Annual Report, and
- Our most immediate targets for that metric which are now the 2020 medium term targets (targets in the Plan were generally set for 2015, 2020, and 2035)

The table indicates whether the results for Red Deer as a City (The Corporation of The City of Red Deer) and/or as a broader community are on track to meet the 2020 (10 year medium term) target.

The EMP Annual Report records and tracks progress on metrics and targets across all seven focus areas.

Environmental Master Plan Annual Report, 2018

Results Overview

An overview of the 20 areas of measurement indicates:

☐ Metrics On Target (10/20):
- o Water consumption
- o Annual Water Losses
- o Natural areas
- o Man-made green areas
- o Integrated pest management
- o Dwelling unit proximity to community amenities
- o Length of trail kilometres per resident
- o Waste diverted
- o Amount of residential solid waste
- o Overall per capita disposal rate

☐ Metrics Not On Target (4/20):
- o Fuel consumption per capita
- o Building energy: average building intensity
- o Use of renewable energy
- o Greenhouse Gas emissions

☐ Metrics Showing Mixed Results/Results Unavailable (5/20):
- o Water Quality of Receiving Bodies – water quality is measured by reporting on a group of compounds in the River/tributaries, targets for one compound has been met but others have not been met
- o Modal Split (most recent Federal Census data is 2016)
- o Community Gardens – there has been growth in this metric but not the amount necessary to meet the ambitious target
- o Development "Footprint" of per capita land consumption – inconsistent results/no trends are evident.

- o Air quality - air quality is measured by reporting on a group of compounds in the air, targets for all compounds have been met with the exception of fine particulate matter air quality (PM $_{2.5}$)

☐ Metrics With No Established Targets (1/20):
- o Urban forestry - no established targets or metrics appeared within the 2011 EMP. However, the Urban Forest Management Plan and Implementation Strategy have been completed and have been administratively adopted by The City of Red Deer. Targets within this focus area, informed by the Urban Forest Management Plan, are being reviewed within the EMP refresh and will be recognised within the 2019 EMP.

As in previous years, The City will publish a public report card highlighting the key 2018 EMP results.

Table A: 2018 Report on Metrics and Measures

Benchmarks and Metrics Results 2018

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Population	*89,891*	*99,832* no city Census conducted in 2017*	*99,832*no city Census conducted in 2018*		
WATER					
Potable water consumption provided through municipal water supply, per capita (L/cap/day)	Residential: 242 L/cap/day Industrial/ Commercial /Institutional (ICI): 135 L/cap/day	Residential: 191 L/cap/day ICI: 108 L/cap/day * Data from Environmental Services. **Note that water consumption can be dependent on weather conditions.	Residential: 193 L/cap/day ICI: 108 L/cap/day * Data from Environmental Services. **Note that water consumption can be dependent on weather conditions.	Decrease by 22% (to Residential: 189 L/cap/day and ICI: 105 L/cap/day)	Yes, although water use went up in the residential sector slightly in 2018, it has fallen steadily since 2009. Overall, we are on track towards 2020 target.
Water Quality of Receiving Bodies * Based on the Red Deer River Watershed Alliance's Integrated Water Management Plan water quality objectives.	Total phosphorus: 0.017 mg/L Total nitrogen: 0.381 mg/L Total suspended solids: 4 mg/L Dissolved oxygen: 10.4 mg/L E.coli: 9 counts/100mL ** Baseline and targets approved for 2016 forward.*	Total phosphorus: 0.0125 mg/L Total nitrogen: 0.410 mg/L Total suspended solids: 2.9 mg/L Dissolved oxygen: 11.2 mg/L E.coli: 11 counts/100mL	Total phosphorus: 0.0120 mg/L Total nitrogen: 0.400 mg/L Total suspended solids: 3.10 mg/L Dissolved oxygen: 11.0 mg/L E.coli: 11 counts/100mL	Note: <u>2035 Target</u> Do not exceed: Total phosphorus: 0.017 mg/L Total nitrogen: 0.381 mg/L Total suspended solids: 4 mg/L Dissolved oxygen: 10.4 mg/L E.Coli: 9 counts/100mL	Yes and No. Not on track to meet the target in some parameters: nitrogen and E. Coli. (exceeding dissolved oxygen by this amount is not a concern). The City continues to learn about and implement best practises and has time to improve in order to meet the 2020 target.

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Annual water losses recorded	2015 = 11% *Note: reporting refinements in 2016 incorrectly double counted reservoir capacity and pipe capacity. The benchmark of 11% from the original CEP has been confirmed to be correct.*	7%	6%	10% maximum of total water use attributed to losses by 2020	Yes, Red Deer is on track towards/has achieved the 2020 target.
ECOLOGY					
Natural Areas: Land within the city's developed area devoted to native natural features (native tree stands, wetlands, seasonal streams, grasslands, and associated biodiversity)	Total Natural Area = 863 ha	Total Natural Area = 923 ha	Total Natural Area = 990 ha	Increase by 10% (to 949 ha)	Yes, Red Deer has achieved and surpassed the 2020 target.
Man Made Green Areas: land devoted to man-made natural features (city parks, turf areas shrub beds and naturalization areas).	Total Man-Made Green Area = 809 ha	Total Man-Made Green Area = 867 ha	Total Man-Made Green Area = 866 ha	Increase by 10% (to 890 ha)	This metric has shown progress towards the target, but the target has not yet been achieved (total fell by 1 ha)
Integrated Pest Management: Volume of toxic pest control product used per acre of municipally owned land (ml/acre)	210 ml/acre	237,573 ml herbicide + 0 ml insecticide = 237,573 ml 237,573 ml / 4423 acres = 54 ml/acre	511,047 ml herbicide + 0 ml insecticide = 511,047 ml 511,047 ml / 4586 acres = 111 ml/acre	Decrease by 5% (to 199.5 ml/acre)	Yes, Red Deer has achieved the 2020 target. *Note: Product application can vary from year to year, however, variations are below the target.*

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Urban Forestry: Urban forest coverage (percentage of area within city's developed area covered by tree canopy)	None	Update 2017: None	Update 2018: None	No target set within current EMP.	No targets set.
TRANSPORTATION					
Total Fuel (gasoline and diesel) consumption data for the city annually (Note this metric replaces Vehicle Kilometres Travelled (VKT) per capita/day by car used in 2011)	1257 litres/capita (L/cap) Total gasoline and diesel consumption = 112,998,927 L	1418 L/cap Total gasoline and diesel consumption = 141,570,111 L	1415 L/cap Total gasoline and diesel consumption = 141,269,404 L	Target (2015) =1156 L/cap Target equates to an overall 8% reduction by 2015 from the baseline year (2009). No target set for 2020 or 2035.	No targets beyond 2015 were established.
Modal Split: Percentage of different modes of transportation used to travel to work	Car: 88% Transit: 4% Pedestrian or Bike: 7% Other: 1%	Car: 89% Transit: 4.5% Pedestrian or Bike: 5% Other: 1.5% (Source: 2016 Census, released 2017)	Car: 89% Transit: 4.5% Pedestrian or Bike: 5% Other: 1.5% (Source: 2016 Census, released 2017)	2021: Car: 84% Transit: 6% Pedestrian or Bike: 9% Other: 1%	Not clear, metric relies on Federal Census point in time data. The next Federal Census is 2021.
Dwelling Units within 400 metres of: 1) public trails, parks or other green space,	2012 served as our baseline**. 1) Public trails, parks or green space = 100% 2) Commercial	1) Public trails, parks or green spaces = 100% 2) Commercial zoned property = 60%; and existing	1) Public trails, parks and green spaces = 100% 2) Commercial zoned property (including DC districts) = 59%;	1) Public trails, parks and other green space = 100% 2) Commercial zoned property =	Yes, Red Deer is on track towards/has achieved the 2020 target. Target for proximity to community

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
2) at least 5 basic amenities represented by commercial zoned properties or school sites*, and 3) Transit stops* *Council approved (2012) refinement of this metric to amenities represented by commercial and school sites and transit stops.	zoned property = 56% and existing schools = 38% 3) Transit stops = 97% **Baseline calculation does not include residential units not in an urban neighbourhood (e.g. Central Park is not included) ***Measurement is completed as the crow flies.	schools = 40% 3) Transit stops = 99% 4) Dwelling units within 400 meters of all parameters = 26%	and existing schools = 40% 3) Transit stops = 99% 4) Dwelling units within 400 meters of all parameters = 25%	60%, and existing schools = 45% 3) Transit stops = 97%	amenities (proximity to schools and commercial sites is currently below target).
Length of trails/ bicycle/ pedestrian routes (km/capita) Measured in lane kms. Includes bike routes (shared) and bike lanes (dedicated), multi-use trails (including asphalt and concrete surface trails in parks and shared trails (includes non-hard surface trails such as boardwalk, aggregate, wood chip, & pedestrian only trails). ** note wording and	1 km ratio to every 672 persons (2009 Census: 89,891 persons)	Bike Lanes Shared 7.3 km <u>Dedicated 12.1 km</u> **TOTAL 19.4 km** Park Multi-Use Trails Concrete 13.0 km <u>Asphalt 119.2 km</u> **TOTAL 132.2 km** Shared Trails` Boardwalk 0.93 km Aggreg. 36.9 km Dirt 8.9 km <u>Brick 0.53 km</u> **TOTAL 47.3 km**	Bike Lanes Shared 7.3 km <u>Dedicated 12.1 km</u> **TOTAL 19.4 km** Park Multi-Use Trails Concrete 13.1 km <u>Asphalt 119.8 km</u> **TOTAL 132.9 km** Shared Trails` Boardwalk 0.93 km Aggreg. 36.9 km Dirt 8.9 km <u>Brick 0.51 km</u> **TOTAL 47.2 km**	Increase by 10% (to 1 km ratio to every 605 persons)	Yes, Red Deer is on track towards/has achieved the 2020 target.

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
definitions refined in 2012 to ensure clarity and inclusion of trails that reflect the transportation goals of the EMP		Cumulative total 198.9 km With a population of 99,832 the ratio of bike/pedestrian routes to residents is **1 km: 502 residents**	Cumulative total 199.5 km With a population of 99,832 the ratio of bike/pedestrian routes to residents is **1 km: 500 residents**		
BUILT ENVIRONMENT					
Our Development Footprint "Per Capita Land Consumption" in metres squared per person *Definition: "Per Capita Land Consumption" is the total amount of land within the city that has an urban type zoning (and is or will be imminently used for urban uses) plus roads divided by the current Red Deer population. Note: This metric replaced Development Density in Council's approval of 2012 Annual Report.*	Baseline (2011) 732.0 m²/person Figure by land use category: -Commercial: 33.0 m²/person Direct Control: 14.8 m²/person -Industrial: 109.5 m²/person -Institutional/Parks / Open Space: 215.1 m²/person - Residential: 194.7 m²/person - Roads: 164.92 m²/person **TOTAL**:732 m²/person	The Planning Department is unable to report on this figure for 2017.	729.0 m²/person Figure by land use category: -Commercial: 34.3 m²/person -Industrial: 97.4 m²/person - Mixed Use: 8.9 m²/person -Institutional/Parks / Open Space: 226.9 m²/person - Residential: 191.9 m²/person - Roads: 169.8 m²/person **TOTAL:** 729.2 m²/person	668.7 m²/person 1% decrease per year from baseline data of 2011 2020 target – 9% drop from 2011 figure (668.7 m²/person)	Yes and No. The metric has shown slow movement towards a smaller per person development footprint, however more substantial reductions would be necessary to meet the 2020 target.

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Community Gardens: The land devoted to community gardens and urban agriculture in area (m²/capita)	0.4 m²/cap Note: This combined the total garden plot area as per the City Garden Plot Program with the raised bed garden space as per the Community Garden model (smaller, raised bed gardens that are funded by City and managed by community).	Total City plots: Large: 43 (5,160 m²) + Medium: 250 (15,000 m²) + Small: 52 (1,560 m²) = 21,720 m² Total Community Orchard/Food Forest: Parkside Food Forest 500 m² + Mountview /Sunnybrook Orchard 100 m² + Ft. Normandeau Orchard 120 m² + Sunnybrook Farm Orchard 140 m² + Central Food Forest 150 m² + Lancaster Green Orchard 60 m² + Waskasoo Orchard 30 m² = 1100 m² Total community partnership gardens: 121 boxes/raised beds (653 m²) TOTAL GARDEN AREA=21,720 + 1100 + 653 = 23,473 m² / 99,832 or **0.24 m² / capita**	Total City plots: Large: 43 (5,160 m²) + Medium: 250 (15,000 m²) + Small: 51 (1,530 m²) = 21,690 m² Total Community Orchard/Food Forest: Parkside Food Forest 500 m² + Mountview /Sunnybrook Orchard 100 m² + Ft. Normandeau Orchard 120 m² + Sunnybrook Farm Orchard 140 m² + Central Food Forest 150 m² + Lancaster Green Orchard 60 m² + Waskasoo Orchard 30 m² +Twin Spruce 800 m² = 1900 m² Total community partnership gardens: 150 boxes/raised beds (770 m²) TOTAL GARDEN AREA=21,690 + 1900 + 770 = 24,360 m² / 99,832 or **0.24 m² / capita**	Increase to : 0.75 m²/capita by 2020	While progress has been made with the amount of garden space gradually increasing, the target has not yet been achieved.

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
AIR					
Greenhouse Gas emissions per capita in tonnes (CO_2 equivalent)	Baseline 2010*: Corporate** = 151,347 tCO2e or 1.68 tonnes/ person * Baseline and targets set within the Corporate GHG Plan and The Community Energy and Emissions Plan (CEEP) ** Recalculation of baseline due to methane emissions factor shifting from 21 to 25 under Government of Alberta protocol.	Corporate = 140,863 tCO2e or 1.41 tonnes/person	Corporate = 140,966 tCO2e or 1.40 tCO2e/ person *Assumed population of 100,612	Corporate Target+ = 30% by 2020 and 50% by 2035 (2020: 105,943 tCO2e 2035: 75,674 tCO2e) +Recalculation in target due to increase in methane emissions factor shifting from 21 to 25 under Government of Canada protocol/convention	No. Emissions are not significantly decreasing.
	Community= 1,660,451 tCO2e or 18.43 tonnes/person	Community= 1,570,184 tCO2e or 15.67 tonnes/person	Community= 1,609,832 tCO2e or 16.00 tonnes/person *Assumed population of 100,612	Community: *Target to be determined within the Environmental Master Plan Refresh*	No target has been set yet.
Air Quality: maintain and lower ambient concentrations of airborne pollutants, not exceeding maximums defined by the Canada Wide Standard and AB	PM2.5: 15.9µg/m³ (2007-2009) Canada Wide Standard for: Ozone: 57.5 ppb (2007-09) Sulphur Dioxide SO_2: 0.44 ppb (2005-2009)	PM2.5: 20 µg/m³ *(2014-2016) Ozone: 58 ppb* (2014-2016) * *Updated results that were not available for last year's report* SO_2: 0.22 ppb** (2013-2017)	PM2.5: 24 µg/m³ (2015-2017) Ozone: 57 ppb (2015-2017) SO_2: 0.22 ppb** (2014-2018) NO_2: 9.2 ppb** (2014-2018;)	Canada Wide Standard metric By 2015: PM2.5: 20µg/m³ Ozone: 58 ppb SO_2: 0.42 ppb NO_2: 11.5 ppb	Yes and No. Air quality meets all targets with the exception of Fine Particulate Matter (PM 2.5). These are 2015 targets, no other targets have been established as yet. PM 2.5 levels reported use the Canadian

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Environment	Nitrogen Dioxide NO_2 : 12.1ppb (2005-2009) Carbon Monoxide CO: 0.25ppm (2005-2009)	NO_2: 9.5 ppb** (2013-2017) CO: 0.19 ppm^ (2013-2017) *** Average measured at both Red Deer monitoring stations* *^ Measured at Riverside monitoring station only*	CO: 0.21 ppm^ (2014-2018) *** Average measured at both Red Deer monitoring stations* *^ Measured at Riverside monitoring station only*	CO: 0.24 ppm	ambient air quality standards (CAAQS). These standards were passed federally in 2013 to replace the Canada Wide Standard.
ENERGY					
Building Energy: Average Building Intensity (equivalent KWh/sq. ft. and sq. m)	Baseline (2012)^ 42.5 ekWh/sq. ft. 457 ekWh/sq.m. *^ Note: baseline measure revised this year to address math errors or other corrections (e.g. consistency of square meters and square feet)*	42.3 ekWh/sq. ft. 455 ekWh/sq. m.	43.66 ekWh/sq. ft. 470 ekWh/sq. m.	*By 2020, 20% reduction from 2012 levels. (to 34 ekWh/sq. ft. and 365.6 ekWh/sq. m.) By 2035, 50% reduction from 2012 levels. (to 21.3 ekWh/sq. ft. and 228.5 ekWh/sq. m.) *Based on targets set in EMP Appendix E Benchmarking Tool.*	No, this metric has increased from the baseline measure.

EMP Metrics by Focus Area	2009 Baseline	2017 Results	2018 Results	2020 Target	Progress towards the 2020 Target?
Renewable energy sources: percentage of energy utilized by The City of Red Deer that is produced through green sources (such as renewable resources and energy captured from waste).	15%	0%* *Civic Yards panels generate energy, but the meters only track the surplus sold / returned to the grid, which in 2017 was 0.01% of energy used. Total production by the wash building and building #300 is unknown. Eco Logo certified green energy purchase was discontinued for 2017.	0%* *Civic Yards panels generate energy, but the meters only track the surplus sold / returned to the grid, which in 2018 was 0.008% of energy used. Total production by the wash building and building #300 is unknown. Eco Logo certified green energy purchase was discontinued for 2017.	40%	No, use of renewable energy decreased dramatically in 2017 - 2018.
WASTE					
Amount of Residential Solid Waste*: *Measured as residential garbage in kgs collected curbside per city household per year*	641 kg *Annual kg of garbage per residential curbside account*	499 kg	412 kg	2019 target is 450 kg 2023 target is 400 kg	Yes, Red Deer is on track towards/has achieved the target.
Overall per capita disposal rate: *(meaning total amount of solid waste disposed measured per year per capita and excluding waste from regional customers)*	812 kg/capita (2011)	830 kg/capita	759 kg/capita	2020 target is 600 kg/capita 2023 target is 500 kg/capita.	Yes, on track towards achieving the 2020 target
Waste Diverted: percentage of waste diverted per year per tonne of waste land-filled.	10%	14%	16%	Increase to 30%	Yes, on track towards achieving the 2020 target.

Results Summary

The 2018 Annual Report indicates measured achievement across all focus areas and at the same time identified areas for improvement or continued persistence. The EMP is undergoing a review and refresh that will be complete in 2019. The review is giving close consideration to the annual report results as well as refreshed actions and initiatives that will support Red Deer in meeting environmental targets and goals.

Recommendations

As the review of the Environmental Master Plan is underway, no recommendations for edits or changes to the Plan are suggested at this time.

The 2018 Annual Report indicates measured achievement across all seven focus areas and at the same time identified areas for improvement or continued persistence.

Appendix A: Year End Status Reports of Plans Adopted under the direction of the Environmental Master Plan

- Greening the Fleet: 2018 Annual Reporting
- Waste Management Master Plan: 2018 Annual Reporting
- Built Environment Focus Area: 2018 Annual Reporting
- Corporate Greenhouse Gas Emissions Analysis and Reporting 2018

- *Note: Urban Forest Management Plan: no reporting at this time. The Urban Forest Management Plan and Implementation Strategy have been completed and have been Administratively adopted by The City of Red Deer (2018)*

Greening the Fleet: 2018 Annual Reporting

INTRODUCTION

The Environmental Master Plan (EMP) identified opportunities to reduce Green House Gas (GHG) emissions in our community by Greening the Fleet. Greening the Fleet simply means to: reduce the environmental impact of our fleet, be fiscally responsible and be mindful of social benefits. The current status of the primary initiatives we have taken to Green the Fleet is as follows:

I)   ALTERNATIVE FUEL VEHICLE IMPLEMENTATION (CNG)

Background: In 2014, Council approved the Compressed Natural Gas (CNG) Transit Bus Proposal. It was determined that the use of CNG fuel in full size Transit buses will significantly reduce GHG emissions since Transit consumes two-thirds of all fuel used by the City subfleets.   Implementing a CNG fueling infrastructure will make it viable to expand CNG into other subfleets, increasing synergies and further reducing GHG emissions.

Potential Benefits: Migrating to a CNG Infrastructure for Transit Buses, Paratransit Buses, Pickup Trucks (1 ton, ¾ ton, ½ ton), HD Dump and Utility Bed Trucks has the potential to reduce petroleum consumption and environmental impact by decreasing fuel consumption and increasing fuel savings.

Current Status: The CNG project is operational, with 38 new CNG transit and paratransit buses delivered in 2016-2018. Construction of the CNG fueling station and associated building modification were completed in 2017.

Next Possible Actions:

- Implementation of additional CNG units into the fleet. (i.e. Pick-ups, Heavy duty equipment)

II)   IDLE FREE INITIATIVE

Background: In 2008, the City of Red Deer launched a fleet wide idle free initiative. To support this initiative, the city deployed signs, placed decals on vehicle doors, created an information card, and acknowledged employees with exemplary idling behaviors.

In 2015, the Idle Free program was re-launched as the "Idling 'Gets You Nowhere" Program. Fuel saving information was interactively shared with staff at the Civic Yards through the deployment of several 'green' cork boards that showcased monthly idle free and fuel saving practices. Coffee cards were rewarded to successful draw applicants that answered fuel saving questions correctly.

Potential Benefits: For a relatively low implementation cost this initiative has the potential to increase fuel efficiency thereby reducing the emissions footprint and increasing significant operational cost savings fleet wide.

Current Status: The Fleet Garage, as part of regular maintenance, has the ability to identify idle times for certain fleet vehicles and are communicating this data back to the sub-fleets (specifically Transit).

The cultural shift away from excessive idling is still encouraged but requires persistent advocacy from operational supervisors and management. Fleet Services will continue to advance the "Idling 'Gets You Nowhere" and acknowledge individuals who lead this change.

Transit implemented GPS and security system cameras (SWIT) into all conventional buses. This technology allows Transit to monitor driver behaviors, idle and wait times as well as ridership to help future plans for efficiency in their daily routes.

In 2017 the electric car rotated throughout City departments, with positive response for local driving. The potential for additional electric vehicles has also been communicated to Fleet Services.

For 2018-2019 The City has acquired multiple units with Auto-Stop technology. Units will automatically shut down at red lights or during excessive idling. This technology will be standard with most new vehicles to reduce emissions.

Next Possible Actions:
- Expand GPS system to more units to collect fuel use and driver behavior

- Build on technology to collect and analyse data on idling behaviour
- Re-Ignite – "Idling 'Gets You Nowhere" Program
- Fleet Utilization Reports – Idle Reports
- Implement metrics to track progress
- Define achievable goals
- Encourage good behavior and enforce policy

III)   SMART DRIVER INITIATIVE

Background: Implementing a Smart Driver Training program was identified as "low hanging fruit" that could significantly reduce operational costs and GHG emissions fleet wide.

Potential Benefits: Implementing Smart Driver Training fleet wide has the potential to improve fuel efficiency thereby decreasing fuel consumption and high maintenance costs.

Current Status: The Smart Driver Training is currently implemented for all new drivers and drivers needing to refresh their driving training certification, fleet wide. Some of the Smart Driver training includes: driving within the speed limit, coasting around corners, not over-using the brakes, not being on and off the accelerator, non-aggressive driving, and low revolutions per minute (RPM) for fuel efficiency.

Though training is being provided, it is difficult to determine if the Smart Driver training is being practiced.

Next Possible Actions:
- Install driver information systems to show real-time efficiency and effects of driving behavior
- Develop driver incentives
- Publish Smart Driver Tips in the Civic Spirit
- Display Smart Driver Tips on the Green Cork Boards at the Civic Yards
- Ensure new contractor continues to incorporate Smart Driver training

IV)   VEHICLE RIGHT- TYPING

Background: Initially started in 2009 to reduce overall capital expenditures and operating costs, the City is currently taking steps to right-type equipment with the input of sub-fleet representatives to ensure optimized vehicles are being purchased and utilized.

Potential Benefits: Right-typing has potential for a sizable operational cost and emission footprint reduction by purchasing smaller fuel efficient replacement vehicles fleet wide.

Current Status: Public Works Fleet Service continues to guide sub-fleets into selecting vehicle types that are best suited for their daily operations. In 2017, Public Works initiated work on a corporate Fleet Policy, to help right typing reach its full potential.

Next Possible Actions:
- Finalize and launch a Vehicle Right-Typing section within the Fleet Policy
- Operational Reviews for Vehicle Procurement

V)   VEHICLE RIGHT- SIZING THE FLEET

Background: It was identified that Right Sizing the fleet has potential to increase the unit utilization by partnering and pooling resources with the sub-fleets.

Potential Benefits: Right-Sizing the Fleet has potential for generating savings by reducing operational costs (vehicle leases, new acquisitions, preventative maintenance) in accordance with the size of the fleet.

Current Status: There was a fleet pool started in 2017 for pick-up trucks. Fleet kept seven fully depreciated vehicles within the fleet to rent as needed at a reduced rate. The response has been excellent, and all are rented out long-term. With this success, we hope to expand this pooling concept. Like the Idle Free initiative, support and leadership from frontline supervisors, superintendents and managers will be needed to create a cultural change in the way we maximize the use of our resources.

Next Possible Actions:
- Finalize and launch Vehicle Right-Size section within the Fleet Policy
- Increase the Fleet Pool size (ongoing)

CONCLUSION

Numerous Greening the Fleet initiatives are advancing in various stages to meet the directive of reducing our GHG emissions on our community as identified by the EMP. The next possible actions have been identified to help drive these initiatives forward.

Waste Management Master Plan: 2018 Annual Reporting

The Waste Management Master Plan (WWMP) was approved by Council on May 13, 2013, making 2018 the fifth full year of WMMP implementation.

2018 Activities
Education / Promotion Approaches
- Zero Waste Public Events
    - Continued to pilot zero waste stations that can be used at events and reinforce the same colours for containers for collecting materials as is used in the Cart Pilot Project. The stations were piloted at a number of internal events and one external event in 2018. A review of each event is conducted and adjustments to processes and signage is made based on lessons learned.

Residential Waste Reduction / Diversion
- Continued the award winning Composting at Home program, providing the opportunity for Red Deer households to learn how to back yard compost.

Cart Program Launch
- In 2017, following the evaluation of the Cart pilot project's results, namely that pilot households were measured to have reduced the amount of garbage they produce by 39% compared to non-pilot households, Council approved implementing a city-wide Green Cart program in April 2018, to be followed by a city-wide Blue and Black Cart program in the spring of 2019.
- 29,000 Green Carts were delivered to Red Deer households between February 20 and March 16, 2018. Included with each Green Cart was a detailed education package explaining how the new program worked and a Kitchen Container for the collection of food waste inside the home.
- Green Cart collection began on April 9, 2018 aligning with when the former yard waste collection program would have started.

- Initial diversion results are very positive, with the amount of residential garbage collected decreasing by 27% after Green Cart collection began, compared to the same time period in 2017. When the blue box program was introduced in 1991 and again when the yard waste program was introduced in 1997, it took about three years to build up to the tonnages that became their standard diversion rates. With the phased approach used for launching the Cart program, it is anticipated that diversion amounts will continue to grow as residents become more accustomed to the program and after Blue and Black Cart collection is implemented in 2019.
- In preparation for Blue and Black Cart implementation, letters were sent to Red Deer households in November 2018, outlining options for selecting the size Blue and Black Cart that would be delivered to their homes. Based on the learnings from the pilot project, three different sizes were offered for both Blue and Black Carts providing households the opportunity to customize their Blue and Black Cart sizes to best meet their household's needs.

What's next for 2019:
- Blue and Black Carts will be delivered to households between March 18 and April 18, 2019.
- Blue and Black Cart collection will begin the week of May 6, 2019 on an alternating every other week collection schedule.

Built Environment Focus Area

September 2019

Introduction

The Environmental Master Plan (EMP) identifies a Built Environment goal of creating "vital, well integrated, compact communities that minimize negative environmental impacts"[1]. Activities which support compact urban form and minimum densities, environmental design standards, integrated parking, and underutilized site redevelopment are germane to this focus area.

1) *Downtown Red Deer's Investment Attraction Plan* (DIAP) – *Stimulating Development on Underutilized Sites*

Background

The EMP recommends encouraging the redevelopment of brownfield sites (in accordance with Greater Downtown Action Plan). To help further this work, the *Downtown Red Deer's Investment Attraction Plan (DIAP)* was undertaken in 2016.

The DIAP was approved by Council as a corporate planning tool on May 26, 2016. The plan is comprised of three key areas of focus: 1) Business Retention and Investment Attraction, 2) Parking Management, and 3) Stimulating Development on Underutilized Sites. Underutilized sites, for the purposes of the DIAP, includes both greyfield and brownfield sites. The plan provides a detailed overview of the legislative and policy landscape both locally and provincially surrounding underutilized sites development, as well as an assessment of promising practices, and recommended strategies for The City to explore in efforts to stimulate development on underutilized sites.

Benefits

Brownfield site redevelopment is recognized as an effective strategy in the mitigation or elimination of health/safety risks related to contaminated sites, restoration of environmental quality, reducing urban sprawl, reducing GHG emissions, supporting more compact urban form, and promoting ecological health.

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[1] EMP, pg. 38

Potential initiatives stemming from DIAP recommendations could have positive environmental impacts contributing to Environmental Master Plan goals, including: reduced environmental contamination in our city, reduced pressure for greenfield development, and improved air quality resulting from more compact urban redevelopment and the resulting reduction in transportation needs.

Current Status
Municipal Government Act amendments will have an impact on how municipalities manage brownfield redevelopment moving forward. In order to establish the necessary policy base to support future efforts around brownfield redevelopment, City Administration is preparing to bring forward economic development options for Council consideration in fall of 2019, which would provide direction on next steps. A brownfield bylaw option may be a future direction of implementation.

2) Downtown Residential Attraction Study Project

Background
The EMP recommends that The City "explore tax and other incentives to facilitate downtown reinvestment complimentary to the Greater Downtown Action Plan"[2]. To further previous guiding work the municipality has done, such as the *Economic Development Strategy*, *Downtown Red Deer's Investment Attraction Plan*, and *Greater Downtown Action Plan*, The City has completed a "Downtown Residential Attraction Study".

Benefits
The aim of the study is to increase the number of residents living in our downtown, which will have a direct impact on improving the downtown local business environment and increasing downtown investment. Further initiatives are being explored through economic development options being presented to Council in 2019.

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[2] EMP pg 39

3) *Downtown Red Deer's Investment Attraction Pla*n (DIAP) – *Parking Study* & *Parking Management Strategy* (2017)

Background
The EMP recommends that The City "include consideration of parking practices and policies that encourage public transit use and alternative forms of transportation"[3]. *Municipal Development Plan* policy 16.2 directs The City to "prepare and maintain transportation plans for Red Deer incorporating polices, standards and proposals related to the movement of private and commercial vehicles, transit (including special needs), **parking**, bicycling and walking"[4].

As noted, the DIAP (2016) includes a *Parking Study* component along with recommended short, medium and long-term actions to help improve municipal parking management activities. To guide the prioritization and implementation of these parking actions, Administration worked with Council in 2016 to develop parking management principles intended to ensure integrated parking management policies and procedures, and support balanced implementation moving forward.

Developed to guide implementation of the stated parking principles and objectives, the *Parking Management Strategy* (2017) strives to achieve efficient and effective public parking management while supporting business vitality and sustainable transportation policies. In support of *Municipal Development Plan* and EMP direction, principle # 3 within the strategy compels administration to "promote, establish and maintain programs and facilities that encourage the use of alternative modes of transportation including public transit, car/van pooling, taxis, auto-sharing, cycling and walking".

Benefits
Integrating parking management activities aligned with multimodal transportation, economic development, and financial leadership objectives will help ensure that public parking management supports broad corporate and community objectives in a comprehensive manner.

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[3] EMP, pg 38
[4] MDP, pg 46

Current Status

The 2017 *Parking Management Strategy* is being actively utilized to guide the development of Corporate Administrative policies regarding integrated parking management moving forward. Further DIAP parking review may occur as part of the economic development options in fall 2019.

4) Capstone at Riverlands

Background

The future vision for Capstone at Riverlands has been well established, and continues to be refined. In 2015, The City initiated a conceptual design process of Riverlands, to build on the valuable work that has been done and begin to create some imaginative and inviting designs, focusing on Alexander Way and the Riverwalk. The conceptual design was prepared with a people-first design approach, evolving the plan around public space and public life. Using the conceptual design as a basis, and through additional public engagement, the Area Redevelopment Plan (ARP) and the Land Use Bylaw (LUB) were both updated in 2016 and approved by Red Deer City Council in December of 2016. Since then, work continues to finalize the design and start construction on upgrades to key infrastructure, before above ground redevelopment starts.

Benefits

The redevelopment of the Capstone at Riverlands neighbourhood hits the mark on a number of concepts that support some of the priority policies identified within the EMP, as well as some of the recommendations from the DIAP. At a fundamental level, this redevelopment project will encourage new development within existing underutilized lands. The redevelopment of Riverlands will have a positive influence on a number of the focus areas from the EMP. For example, consider Ecology; the Riverlands plan includes preservation of existing natural areas, development of additional green spaces and naturalized parks. The increased density requirements and the very nature of redevelopment will help improve our metrics relating to the Built Environment; the per capita land requirements will be much less than the targets set in the EMP and the plan includes space for high quality community gardens. Riverlands will also be leading the way for urban development in Red Deer from a mobility perspective and with regard to energy efficient buildings.

The DIAP recommends Marketing as one of the focus areas, and this is also one of the key focus areas for Capstone – to attract top quality developers and businesses, and to bring new residents into the downtown. The investment that The City is making in Capstone with new infrastructure, including new parks, walkable streets, and public plazas will also help with retention and intensification of the existing businesses in the area. The DIAP also recommends focusing on underutilized lands,

and Riverlands is currently one of the City's largest holdings of underutilized lands with 25 acres of vacant land currently owned by The City, and a number of other vacant sites within the neighbourhood. The investment that The City is currently making in Riverlands will help attract and incentivize private investment and development in the area.

Current Status
The planning and visioning stage for Capstone is complete, and we are now well into the implementation phase. Major capital upgrades completed in 2018 include, the replacement of a major storm water trunk main and outfall, replacement of aging underground water and sewer lines, replacement of underground electrical and communications lines and the start of new roads, sidewalks, trails and parks.

Next Steps
Capital construction in 2019 will occur on the Canada 150 Square, the Riverwalk and road and parking lot.

5) Timberlands

Background
Red Deer's Timberlands neighbourhood addresses a number of focus areas with the EMP. The EMP states that the goal for the Built Environment is "to create vital, well-integrated, compact communities that minimize negative environmental impacts". Additionally, the Ecology section focuses on devoting more natural elements and materials with man-made community features, and the Transportation section states its goal as prioritizing active and public transportation.

Benefits
Implementing environmentally sustainable initiatives into our communities allow for lower City maintenance costs, more efficient land use, improved walkability and ultimately more housing options for Red Deerians. Timberlands North also exemplifies to Red Deer's private developers how to incorporate these principles into their communities.

Current Status
Timberlands North implements a number of environmentally sustainable initiatives that address the Built Environment, Ecology and Transportation sections of the EMP. Low Impact Development (LID) principles have been incorporated in a number of ways throughout the Timberlands community. LID design, such as the planting of native vegetation allows for improved

drainage, more absorption, and increased storm water infiltration, reducing impacts on natural wetlands and watercourses. As well, designing green spaces to mimic natural landscape elements (such as hardy trees and grasses) allow existing natural environments to flourish and reduce the amount of maintenance required. A greater dedication to trees means as the community matures, the increased tree canopy will reduce potential risk of 'heat island effect'. Site furniture such as benches and gazebos in public spaces are made of durable materials to withstand aging, needing to be replaced less frequently. Timberlands has unique pedestrian-friendly LED lighting whose height is lower than the average community light pole, reducing the amount of light pollution spilled up and out of the community. In addition, the commercial district was developed to include photo voltaic, meaning solar energy provides some power to businesses/stores.

The Timberlands community was designed to be a walkable community, with bus stops peppered throughout the community, lower street lamps to provide more pedestrian-friendly lighting, as well as illuminated bollards and signage to identify pedestrian corridors, parks and trails. Traffic calming curb bump-outs and textured paving patterns where sidewalks meet crosswalks also help identify crosswalks. Sidewalks in residential areas are separated from the road by tree-lined boulevards, increasing the feeling of safety for the pedestrian, as well as providing a visually appealing streetscape.

Lastly, Timberlands North achieves higher density and efficiency of land use through creative community design, grid pattern street layout and a mix of housing products. The design of the Wide Shallow lots included shared back-fences, and saw the elimination of rear lanes, while carriage house (R1C) lots provide the opportunity for two units on one property, as a second home can be built above the rear detached garage. Additionally, living spaces have been incorporated into the commercial district with Live-Work product and Mixed Use commercial on the ground floor and living space above.

Corporate Greenhouse Gas Inventory & Plan
Update 2018

Background
- The Inventory and Plan were created in 2012 and adopted by Council as a planning guide on April 2, 2013
- Takes into account emissions from operations for The City of Red Deer as an organization only
- Stems from the Environmental Master Plan under Air focus area: Corporate emissions level is one of the metrics and the reduction plan is a top priority action
- Recommends 30% reduction from 2010 levels by 2020 and 50% reduction by 2035

Year over year corporate GHG emissions summary

Total corporate emission levels since 2016 have been flat (meaning the levels have neither grown nor been reduced). Considering the addition of new City of Red Deer facilities, it is positive that levels have not increased. However, The City is not on track to meet the 2020 target of a 30% reduction from 2010 levels.

It is anticipated that Red Deer will see reductions in emissions following implementation of the Green Cart organics collection, flaring methane at the Waste Management Facility, expansion of transit compressed natural gas buses, installation of solar energy at Sorensen Station, and co-generation at the Wastewater Treatment Plant. However, these steps will need to balance out any increased energy use and corresponding increased GHG emissions in the future.

Actions taken in 2018

- Methane capture infrastructure at Waste Management Facility came online in November
- Residential curbside organics collection began city-wide in April
- Co-generation commissioning continues at Wastewater Treatment Plant
- Streetlight replacement with LEDs complete
- Solar panels installed at Sorensen Station

Next Steps:

- Actions in the upcoming, refreshed EMP will continue to address GHG emissions
- Sustainability and Climate Change Specialist to be hired in 2019 over a 2-year contract based on funding support from the Federation of Canadian Municipalities; implementing the Corporate GHG Plan will be one of the priorities for this role

Year	TOTAL SITE AREA (m²)	ENERGY TOTAL (ekWh)	Energy Intensity (ekWh/ sq. m.)	GHG TOTAL (tCO₂e)	Carbon Intensity (kgCO₂e/m²)	GHG % Change over Previous Year	GHG % Change over Baseline
2010	165,290	122,702,021	743	143,072	865	-	-
2011	165,226	120,776,375	731	137,689	833	-3.76%	-3.76%
2012	165,286	119,077,569	720	146,773	888	6.60%	2.59%
2013	170,791	119,635,298	701	157,620	922	7.39%	10.17%
2014	171,442	116,283,678	678	162,463	947	3.07%	13.55%
2015	171,362	116,936,323	682	153,991	899	-5.21%	7.63%
2016	173,946	117,555,766	676	144,765	837	-5.99%	1.18%
2017	181,154	120,739,861	666	143,415	793	-0.93%	0.24%
2018	184,765	133,081,157	720	143,438	776	0.02%	0.26%