

City of Spruce Grove
**Climate Change
Implementation Plan:**
Phase 1
2022-2025 Actions

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Executive Summary

Below is a summary of action that builds on Spruce Grove's commitments related to climate resilience and GHG mitigation from the 2023-25 Corporate Plan and 2022-25 Strategic Plan. **New** short-term priority actions are highlighted in **bold text**:

- Energy Efficiency and Supply: Develop the Clean Energy Improvement Program, explore an Innovation City Strategy with green tech, and plan renewable power for the City. **Explore linkages to the Spruce Grove Library's "Empower Me" Pop Ups. Make it the norm when City facility assets require replacement that energy efficiency is one of the goals.**
- Waste Reduction: Educate citizens on food scraps and wasted food diversion, review small black bin fee reduction, and distribute over 1,000 kitchen compost bins. **Review possible carbon reduction impacts of Alberta's new Extended Producer Responsibility regulation as part of the next 2025 Waste Audit.**
- Natural Assets: Identify, enhance and protect natural infrastructure, focusing on Fenwyck Fen and Atim Creek areas as key priorities for carbon sinks and adaptation-related natural capital. Complete further natural asset analysis; explore increasing the climate resilient tree canopy.
- Resilience: Develop adaptation measures to support social wellbeing, the less fortunate, recreation and stormwater infrastructure as highlighted in the Strategic Plan. Create an education program on climate change resilience.
- Low Carbon Transportation: Expand transit, active transportation corridors and consider electrification; the two inter-municipal trails from Spruce Grove to Stony Plain are the immediate priority. **Reduce idling through signage** and adaptive traffic signals such as the inter-connect between traffic signals and CN Rail controller. Develop an EV Strategy with charging infrastructure and expanded fleet, including a jumpstart installment of 17 stations plus an EV Zamboni. **Promote connections to regional hydrogen development and distribution systems through Edmonton Global.**
- Local Agriculture: Support community gardens, locally produced agriculture programs to provide food options through farmer's markets, edible trees and pollinator gardens.
- Land-use Planning: Continue to work through land use planning and districting to support increased development density where possible, such as the City Centre Area Redevelopment Plan.
- Information Management: Support **equipment, information and data management** for GHGs, weather and air quality.
- Capacity Building: Explore increased capacity by building **staff competencies, better understanding in-house knowledge, citizen engagement like the Youth Advisory Committee, partnerships, grant opportunities and a Reserve Fund** for future projects.

In addition to increasing our City's resilience to the physical effects of climate change, the mitigation actions in this plan are estimated to deliver about 4 per cent++ of the required GHG emissions savings required to stay within the 2022-25 carbon targets and 2 per cent of the required GHG emissions over the CCAP timeline of 2022-2033.

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Climate Change – Implementation Plan *Phase 1*

Plan Background

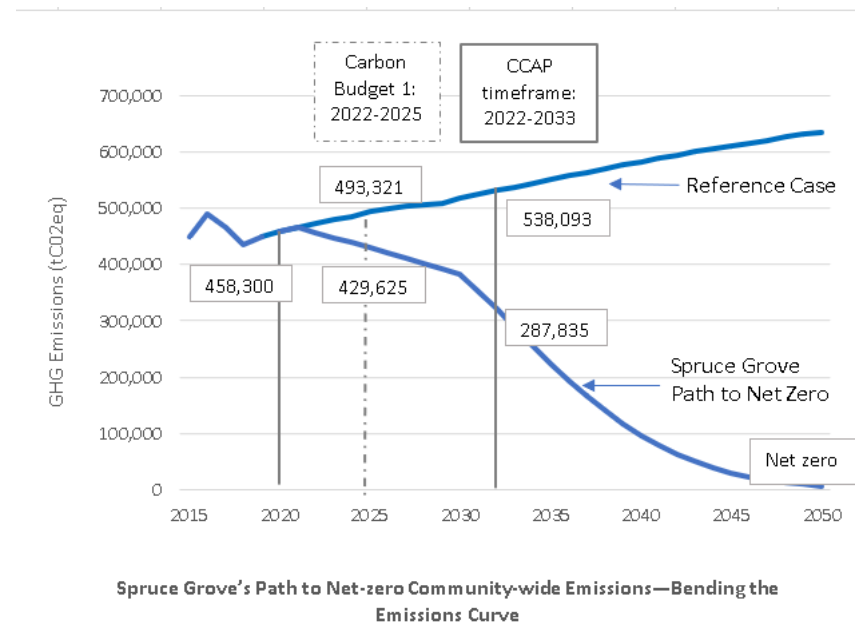
The City of Spruce Grove is preparing for the impacts of a changing climate while also contributing to our collective goal of limiting future climate change. The 2022 Spruce Grove Climate Change Action Plan (CCAP) identified possible actions for the future.

In 2020, Spruce Grove produced 458,300 t CO₂eq which is projected to rise through 2050. The CCAP set a trajectory for Spruce Grove towards the aspirational goal of carbon-neutrality (net-zero) by 2050.

The CCAP timeline is 2022-2033, broken into 3 carbon budget periods:

- Budget 1 from 2022 to 2025, which limits city emissions to 429,600 t CO₂eq per year by 2025.
- Budget 2 from 2026 to 2029, which limits city emissions to 391,700 t CO₂eq per year by 2029.
- Budget 3 from 2030-to 2033, which limit city emissions to 287,800 t CO₂eq per year by 2033.

This report, *Implementation Plan Phase 1*, is a plan for action with actions happening in the short (2022-2023) and medium (2024-2025) term. In 2024/5, *Implementation Phase 2* will create a plan for actions to be taken within the longer time horizon of 2026-2033.



Implementation Phase 1 is an internal facing document that will:

- inform corporate planning;
- inform future business case development;
- allow Administration to report back to Council on progress toward our metric for measurement: the carbon reduction aspirational target; and
- inform Municipal Development Plan development.

This plan describes the actions listed in Table 2 for the period 2022-23 (short term) and Table 3 for the period 2024-25 (medium term), names the responsible departments within the City administration, estimates (where available) the GHG reduction impact, and describes the estimated cost for each action.

Climate Change and Spruce Grove: Risks and GHG emissions

In a future where cumulative GHG emissions continue to increase at current rates over the coming decades, Spruce Grove can expect to experience hotter summers, warmer winters, more extreme weather, and water stress. Driven by these changes, high priority risks to Spruce Grove include **multi-year drought, heatwaves, freezing rain and hailstorms** (CCAP, pp. 15). In addition, the City faces a **reputational risk** on its commitment to act. Without action to address the impacts of climate change, negative local impacts to human health, property damage and the loss of ecosystem services are anticipated.

Since 1996, our City's total GHG emissions have increased 67 per cent (CCAP, pp ii, 2022) and are projected to increase further 40 per cent by 2050 (CCAP, p30, 2022). Table 1 shows the sources Spruce Grove's GHG emissions sources in 2020 when total emissions amounted to 458.3 kt CO₂e (or 12 t CO₂e per person).

Table 1 Spruce Grove GHG Emission Sources in 2020

	Source	Description	Estimated City GHG Emissions in 2020
Community	Road Transportation	Vehicles	44.6%
	Homes	Energy use in homes	29.4%
	Businesses & Industry	Energy use in business and industrial premises	21.8%
	Solid Waste	Landfilled organic waste	2.4%
Municipal	City Buildings	Energy for city buildings	1.2%
	City Fleet	Fuel and energy for city vehicles and equipment	0.2%
	Lights & Signs	Streetlights, signs, etc.	0.2%
	Water & Sewage	Water and sewage pumping	0.2%

Purpose

The CCAP actions were designed to build **resilience to anticipated changes in the local climate** and set a trajectory for Spruce Grove **towards carbon-neutrality by 2050**. The long-term goal is to ensure Spruce Grove remains a resilient, safe and attractive place to live, work and play, and that the City does its part to address climate change.

The value of this plan is to create momentum and kick start action in the near-term, laying the foundations for ramping up climate actions in the longer-term. It will demonstrate that the City is making progress on its aspirational carbon reduction targets and inspire internal climate champions within the City to create a **culture shift** toward considering climate action in daily work and engaging community partners over the longer-term. Progress on these items will help make our communities safer, make current and future generations healthier and more secure, make our economy vibrant and stable, our environment more sustainable, and our society more inclusive and equitable.

Process, Metrics and Defining Success

Over 2022, the CCAP was reviewed by Spruce Grove Administration, and it was determined that although CCAP actions have undergone comprehensive cost-benefit analysis using criteria of effectiveness, co-benefits, equity, flexibility, upfront and ongoing costs, negative side effects, feasibility, and acceptability, current City organizational capacity necessitated placing the highest priority on easy wins for short-term action.

Based on that work, the following criteria were used to identify actions to be taken in Implementation Plan 1:

- 1) Increase the relative balance of city-wide GHG reduction actions to reducing 'community-wide' GHG emissions, which account for 98 per cent of the City's GHG emissions.
- 2) The second (and the most important) measure of success will be the identification of those projects with a high degree of corporate buy-in or work already underway (ongoing initiatives) and propelling those actions forward. This means mining overlap areas in the 2022-25 COSG Strategic Plan, as well as business cases and actions already underway through the corporate planning process.
- 3) The third measure of success will be to the degree to which the aspirational carbon target (430 ktCo₂eq by 2025) is projected to be met; however, it was recognised that this would be challenging and that is why the targets were set as "aspirational".

GHG Emission Reduction Modelling

For the city to reach its aspirational goals, a wide array of actions will need to be taken. To understand the impact of proposed actions for Implementation Phase 1, GHG impact was assessed on 8 actions where impacts could be quantified or could have the greatest amount of impact. To conduct this analysis, a number of assumptions were made about the implementation of these actions.

The assessed actions were:

- EV Strategy - L2 charging sites
- Incentivize adoption of smaller waste black bins (120L)
- CEIP residential program
- On-demand transit - increase service hours in summer
- Conserve Fenwyck Fen
- Retrofits of Civic Buildings
- Increase urban tree canopy
- Reduce idling time Highway 16A - adaptive traffic controls

Some of the actions, such as conserving Fenwyck Fen, have consistent annual GHG reductions over time. Other actions, such as implementation of the CEIP residential program, have modest annual GHG reductions in the short and medium term with larger impacts in the longer term. For this reason, both the estimated B1 GHG reductions and the combined B1-B3 GHG reduction estimates are described in Table 2 and Table 3 below.

Under the modelling assumptions used, if these 8 actions are completed, **Spruce Grove will achieve approximately 5,700 tCO₂eq or 3.6 per cent of the GHG emissions required within B1.** Over B1-B3, the City will achieve 26,500 tCO₂eq, or 2 per cent, of the required GHG emissions over B1-B3.

In addition, for those actions that reduce energy consumption, **total bill savings over all three carbon budgets are estimated at about \$13 million**, split between the City and between City residents and businesses.

Short Term Actions (2022/23)

Wording in italics is direct wording from 2022-2025 Strategic Plan;

Red Font = Action has occurred since CCAP went to Council in Spring 2022.

Table 2 Actions in progress or under review (Short-term) (2022/23):¹

Action	Type (Mitigation/ Adaptation)	Focus (Community/ Internal)	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
1 <i>Develop a formal strategy for the City's approach to electric vehicles...</i> (SP Goal 7a2) -EV stations to be constructed at level 2 (Public/Fleet) in 2023 -Full EV Strategy delayed until 2023 (review pg. 40 CCAP for overlapping related actions) -EV Zamboni and three fleet vehicles planned -Electric scooter pilot	Mitigation High	Community & Internal B1 saving 741 tCO ₂ e B1-B3 savings: 2,759 tCO ₂ e (for community EV stations) Metrics:	EV Chargers = \$30,000/\$200,000 Grant in 2022 with carry-forward for installation challenges. In 2023, EV Strategy = \$25,000 within existing budgets. Small grants for Zamboni and fleet vehicles approved.	RD Facilities and Fleet Management SD Environment (RD Scooter Pilot ED)	2023 17 EV Stations to be built Scooter Pilot 2024 EV Strategy 2024

¹Note that any ongoing actions that were included in the Spruce Grove Path baseline (reference case) are not repeated in the action list.

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
		-purchases/ use of charging infrastructure (note: supply chain challenges)			
2 <i>Provide recommendations on waste management options</i> (SP Goal 7c1) -review fee reduction of small garbage bins for residents, -continue waste education (i.e., social media, Canada Day, Door-to-Door Organics Campaign). Review additional educational opportunities (i.e., participate in local events like Garbage Clean-up) -distribute the 1400 organic bin kitchen catchers to residents that are at the EcoCentre -explore carbon reduction impacts of EPR as part of next Waste Audit	Mitigation Very High	Community B1 saving 1,260 tCO2eq B1-B3 savings: 5,041 tCO2eq (for smaller black bin fee reduction adoption) Metrics: -organics diversion	Fee reduction will be considered within waste contract outcomes; 120 L black bin fee reduction to be reviewed for funding by the utility at ~20 per cent discount from status quo. Some waste education in existing budgets and possibly will be donated opportunity within new waste contract. <i>TBD if business case required.</i> Kitchen Catchers already purchased.	RD Public Works SD Environment	2023
3 <i>Complete area analysis of existing environmentally sensitive lands</i> (SP Goal 9b1)	Adaptation High	Community B1 GHG savings: not modelled	\$20,000 for ESA Mapping in existing budgets for 2023 & 2024	RD Environment SD Planning	2024

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
-this is a project dependency to prepare for SP Goal 9b2		Metrics: completed analysis			
4 <i>Develop an urban agriculture strategy that balances land use opportunities with policy requirements</i> (SP Goal 5a1&2) -should consider projected climate changes and impacts -consider pollinator gardens	Adaptation Very High	Community B1 GHG savings: not modelled Metrics: -community and pollinator gardens Also: running parallel Community Standards review re: urban agriculture	LUP \$30,000 in 2023	RD Planning SD Others	2024
5 Clean Energy Improvement Program (CEIP) Pilot Planning/Bylaw -helps residents to upgrade their homes to be more energy efficient and the cost can be slowly paid back through their property taxes. -this is a key dependency on the climate action communications	Mitigation High	Community B1 saving 740 tCO2eq B1-B3 savings: 7,498 tCO2eq [tbd] Metrics: -program uptake	-BC \$60,000 in 2022 -Possible grants FCM/MCCAC TBD	RD Finance SD IPSS	2024

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
plan (SP Goal 8a1) to promote grant programs to residents (see below) -see Business Case in Corporate Plan					
6 Increase local transit hours and area covered - in summer 2022, hours of service increased by 3 hours and area covered expanded to industrial area	Mitigation Medium	Community B1 saving 158 tCO2eq B1-B3 savings: 465 tCO2eq Metrics: -Transit oriented growth	Ongoing -New: BC for 2025 to expand weekend hours of service and provide a low-income pass	LD Transit	2022 2025
7 Review City bylaws to differentiate definitions of unkempt properties from standards that provide opportunities for eco-landscaping (Goal 6b3) - Standards with respect to naturalized lawns are being explored under the topic of “vegetation, weeds, trees and grass” under community standards bylaw. Council	Adaptation Very High	Community GHG savings: not modelled	Project lead and budget assigned. Public consultation the next step. No further business cases required.	LD IPSS SD others	Bylaw to be drafted 2024.

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
supported further public review of the definition of a naturalized yard as stated on the City of Edmonton website: https://www.edmonton.ca/residential_neighbourhoods/gardens_lawns_trees/natural-private-property					
8 Conserve Fenwyck Fen -About 20 acres of Fenwyck Fen zoned as Environmental Reserve (ER) as part of <i>East Pioneer Area Structure Plan</i> (pg. 7) -fens are high value carbon sinks, as well as the surrounding tree stands -Easton Natural Area will be further reviewed for Conservation Reserve (CR) status at subdivision stage (and ER may be further delineated)	Mitigation High	Community B1 saving 180 tCO ₂ eq B1-B3 savings: 660 tCO ₂ eq Metrics: land protection rules/regulations/policies		LD Planning	2022

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
9 Support data management of GHGs, and build air quality monitoring and continue ongoing work on City weather stations	Mitigation and Adaptation High	Community GHG savings: not modelled	Air quality monitoring equipment in existing budgets for Q4 2023. Business case for GHG measurement should be reviewed at approx. \$15,000 near end of 2025. Energy Specialist could support this work in future.	RD Environment SD IS/FF	2023
10 Act on Energy Efficiency Plans a) Incorporate 2022 Municipal Energy Manager Benchmark Analysis b) Mainstream energy efficiency measures into existing asset management planning and decision-making processes. -The option to replace a more energy efficient asset should be	Mitigation Very High	Internal B1 saving 1,204 tCO ₂ eq B1-B3 savings: 3,291 tCO ₂ eq (re MEM retrofits) Metrics: -energy efficiency upgrades	Occurred as part of Municipal Energy Manager grant Energy efficiency upgrades occurred to some facilities in 2022. Replacement could be opportunity focussed, with possible support from the Asset Reserve Fund.	RD Fleet and Facilities Management SD IPSS Asset Management	2022/23

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
considered as part of the planning process when assets, building components, or fleet are due for rehab or renewal. The next version of the Facilities (Fac) Lifecycle Plan could have GHG reduction or climate adaptation as objective criteria to consider which would influence not only which components get replaced but consider building sub-systems. The lifecycle plan should have a purpose to consider climate objectives when due for replacement, rehab or renewal; currently, its more about reliability and service levels but it is flexible enough to adjust for climate goals and a cost-effective approach.			Solar ready projects [Protective Services (2024) and Agrena (2026)] could be evaluated for Grant Possibilities.		
11 Reduce Community Idling -Coordinate traffic signals along Hwy 16A and arterial roads	Mitigation High	Community B1 saving 1,178 tCO2eq	Traffic signal business case \$10-\$20,000 included in Corporate Plan 2022.	Traffic Signals RD: Engineering Idling RD: RCS	2023

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
<p>-Interconnect Hwy 16A signal controller at Century Rd, Golden Spike Rd, Campsite Rd, and others.</p> <p>-Provide idling educational signage outside BPAC, Agrena and other recreational facilities.</p> <p>Idling is not an effective way to warm up your vehicle even in cold weather. The best way to warm up a car is to drive it. If Canadians avoided idling for just three minutes every day, CO2 emissions could be reduced by 1.4 million tonnes annually.</p>		B1-B3 savings: 4,163 tCO2eq	Educational signage to be actioned through existing E&T budgets with operational support through Public Works.	SD: Environment/Co ms and Public Works	
<p>12 Incorporate Tree/Shrub Giveaway into City Recreation Summer Children's Camps or Events (for 2023 100 Strawberry Plants)</p>	Mitigation and Adaptation N/A	Community GHG savings: not modelled	Strawberry Plants donated by Kiwi Nurseries	RD: Environment SD: PW/RCS	2023
<p>13 Increase Capacity</p>	Mitigation & Adaptation	Internal	This fund could also be augmented by a possible	a]RD: Finance/HR	2024

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/M edium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
<p>a) Leverage the existing Asset Reserve Fund for renewables, energy efficient assets for facilities (systems and components) and fleet and consider ramp up in 2026 for other climate change projects to use a possible “Climate” Reserve Fund. In other words, use a measured approach to ramp up to a Climate Reserve Fund with an expanded scope of applicable climate projects.</p> <p>b) provide internal capacity to leverage grant funding including a review of existing grants that may be applicable to Spruce Grove; review climate change personnel capacity & build competencies for staff; plan for GHG inventory and carbon budget update; create a partnership and advocacy plan for working with businesses, academic institutions, and other levels of government and regionally</p>	N/A	GHG savings: not modelled	<p>climate levy, EPR savings or by cycling back cost savings on energy bills from efficiencies.</p> <p>Business case for Environment and Climate Change Specialist (2023).</p> <p>Staff competency building within existing budgets.</p> <p>Engagements with Youth Advisory Committee in 2023/4 within existing budgets.</p> <p>To coincide with capacity ramp-up to the community level, in 2024 review partnerships/advocacy plan.</p>	SD: E & T b) RD: E&T	

Action	Type (Mitigation/ Adaptation)	Focus (Community/ Internal)	Estimated Cost	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
	CCAP Score Priority (Very High/High/M edium)	GHG savings Measurement metrics			
14 Explore connections to regional hydrogen development and distribution systems through Edmonton Global.	Mitigation N/A	Community GHG savings: not modelled	Ongoing Will be dependent on technology scale up.	RD: Economic Development	Unknown.

Medium Term Actions (2024/25)

Wording in italics is direct wording from 2022-2025 Strategic Plan;

Red Font = Action has occurred since CCAP went to Council in Spring 2022

Table 3: Medium Term Actions (2024-2025)²

Action	Type (Mitigation/ Adaptation)	Focus (Community/ Internal)	Estimated Budget	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
1 <i>Create a communications plan that provides information to residents on home improvements that improve resilience (Goal 8 a 1)</i> -promote grant programs like CEIP, Canada Green Homes, to residents -e.g., see City of Calgary Climate Ready Home Guide -explore linkages with the Library's Empower Me program	Mitigation & Adaptation High	Community GHG savings: not modelled	Requires a project plan.	RD: Environment SD: Coms	2025
2 <i>Update flood mapping and the City's Stormwater Plan to include anticipated climate change impacts (Goal 8b2)</i>	Adaptation High	Community GHG savings: not modelled	Requires a project plan.	RD Engineering	2024

² Note that any ongoing actions that were included in the Spruce Grove Path baseline (reference case) are not repeated in the action list

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/Medium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Budget	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
3 Re: Climate Resilience: <i>Continue Working with the Winter Emergency Response Committee (Goal 8c1)</i>	Adaptation High	Community GHG savings: not modelled	Unknown	RD Community Social Development	2024
4 <i>Develop an education program for residents about local climate change impacts (Goal 8c2)</i> -education on climate change and the impacts on the community (and how the City is preparing for them)	Adaptation High	Community GHG savings: not modelled	\$78,200 grant from Municipal Climate Change Action Centre.	RD Environment	2023-2024
5 <i>Explore opportunities for indoor recreation during extreme heat or poor air quality times (Goal 8c3)</i>	Adaptation Very High	Community GHG savings: not modelled	No budget estimate yet; should tie into Civic Centre development	RD Recreation and Culture Services	2024
6 <i>Determine feasibility of providing real time updates of outdoor rinks and ice conditions (Goal 8c4)</i>	Adaptation Very High	Community GHG savings: not modelled	No budget estimate yet.	RD Recreation and Culture Services SD Public Works	2024
7 <i>Create a policy program to determine service levels and targets around naturalizing our</i>	Adaptation & /Mitigation	Community	Requires a project plan.	RD PW	2024

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/Medium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Budget	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
<i>urban landscapes and the urban canopy (Goal 9a1)</i>	Very High	GHG savings: not modelled		SD Policy/Environment	
8 <i>Coordinate an update to the City's Transportation Master Plan with the development of the MDP, which includes an updated Active Transportation Network Plan (Goal 6a3)</i> -2 Trails have been approved between Spruce Grove and Stony Plain -One trail was completed in summer 2022. That one runs north-south along Boundary Road north of 16A. -A 2nd trail is being constructed on the south side of Hwy 16A between Stony Plain and Jennifer Heil Way	Mitigation High	Community GHG savings: not modelled Metrics: -alternative transportation infrastructure	Master Plan requires a project plan. 2 Trails already have allocated budget.	RD Engineering SD Planning	Plan 2024 1 trail in 2022 1 Trail in 2023* Note: these should be counted in short term action
9 <i>Integrate environmental considerations into planning and approvals relating to growth, planning, infrastructure, transportation, and development (Goal 7a1)</i>	Mitigation & Adaptation Very High	Community GHG savings: not modelled	Requires a project plan.	Unknown.	2025

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/Medium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Budget	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
10 Identification and preservation of environmentally sensitive areas as priority in the MDP (SP Goal 9b2) -Enhance and protect natural areas -Fenwyck and Atim Creek priorities as possible largest contiguous undisturbed natural areas. Wetlands are also carbon sinks.	Mitigation High	Community See Fenwyck GHG savings estimate in Table 1 Metrics: -designation or regeneration of protected areas (wetlands and urban forests)	Part of MDP budget	RD Planning SD Environment	2024-5
11 Increase the climate resilient tree canopy (e.g., no net loss of forest lands/trees, create opportunities for citizens to plant trees in publicly owned spaces, ensure vegetation climate resiliency. Consider some block or community incentives to encourage planting. Increase tree diversity requirements for developers, provide tree soil cells.)	Mitigation & Adaptation Very High	Community B1 saving 215 tCO2eq B1-B3 savings: 2,600 tCO2eq	Explore Grant Options including Tree Canada. PW has requested a 2023 Tree Planting Budget Adjustment of \$40,000 for its 2:1 policy of planting two trees for every lost tree (estimated additional 100 trees/annum).	Unknown.	2024

Action	Type (Mitigation/ Adaptation) CCAP Score Priority (Very High/High/Medium)	Focus (Community/ Internal) GHG savings Measurement metrics	Estimated Budget	Responsible Department (RD) Supporting Department (SD)	Year of Projected Impact
12 <i>Explore the Value of a City Innovation Strategy (Goal12d5)</i> -new technology opportunities and energy efficiency may be opportunities in this strategy	Mitigation N/A	Community GHG savings: not modelled Metrics: -green innovation centres	Unknown	RD: IS SD: Economic Development	2025

References

[Spruce Grove Corporate Plan 2023-2025, 181 pp](#)

[Spruce Grove Strategic Plan 2022-2025, 21 pp](#)

[Spruce Grove Climate Change Action Plan, April 2022, 55 pp](#)

Climate Change Action Plan Internal Technical Reports:

- Technical Report 1: Zukiwsky, J. Prescott, S., and Boyd, R. 2021, **Climate Change Vulnerability and Risk Assessment**. Prepared by All One Sky Foundation for the City of Spruce Grove. 65 pp

- Technical Report 2: Boyd, R. and Prescott, S., 2021, **GHG Emission Projections and Reduction Scenarios**. Prepared by All One Sky Foundation for the City of Spruce Grove. 72 pp
- Technical Report 3: Prescott, S., Boyd, R. and Zukiwsky, J. 2022, **Climate Change Adaptation & Greenhouse Gas Mitigation Actions: Review & Prioritization**. Prepared by All One Sky Foundation for the City of Spruce Grove. 158 pp

Appendix A: Implementation Plan Risks and Response Strategies

Risk	Probability (H/M/L)	Impact (H/M/L)	Response Strategy
Current actions are seen as “enough.”	L	H	<ul style="list-style-type: none"> Engage multiple levels of the organization in the implementation plan review.
MDP Timelines might not match –and there is plan impact uncertainty, e.g., vehicle emissions can be influenced by urban design, changes to tree canopy, etc.	L	L	<ul style="list-style-type: none"> Senior Environmental Advisor should sit on MDP Technical Advisory Committee to ensure action integration between the MDP and the CCAP Implementation Plan. If there are timeline impacts, those should be referenced as a next step in the CCAP implementation plan.
Spruce Grove has already completed many climate plans with various degrees of commitment to action.	L	H	<ul style="list-style-type: none"> Look for synonymous provincial/federal supports, synergies, or opportunities. There are approximately 85 grant programs for climate change actions on Municipal Climate Change Municipal Action Centre website.
It may be difficult to replace assets where there are supply chain issues.	L	L	<ul style="list-style-type: none"> Advanced planning in asset management systems.
Implementation Plan is seen as not including key partners	L	L	<ul style="list-style-type: none"> Strategic public and stakeholder engagement has already occurred through the CCAP development, and more will occur through the new MDP. Given that we are attempting to shift to community actions, it is reasonable that these ideas may require a broad range of partnerships and engagement, but these will be part of individual action project plans where appropriate.

