**1. CLIMATE CHANGE MASTER PLAN AND THE ENERGY EVOLUTION MODEL**

**PLAN DIRECTEUR SUR LES CHANGEMENTS CLIMATIQUES ET MODÈLE ÉVOLUTION ÉNERGÉTIQUE**

**COMMITTEE RECOMMENDATIONS**

**That Council:**

1. **Receive the 2017 and 2018 Greenhouse Gas (GHG) Inventories attached as Document 3 and as outlined in this report;**
2. **Approve:**
   a. **New 2025, 2030 and 2040 corporate targets to reduce GHG emissions 100% by 2040 below 2012 levels;**
   b. **New 2025, 2030, 2040 and 2050 community targets to reduce GHG emissions 100% by 2050 below 2012 levels;**
3. **Approve the Climate Change Master Plan attached as Document 4 and as outlined in this report;**
4. **Receive a project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report attached, as Documents 5, 6 and 7 and as outlined in this report;**
5. **Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in Q2 2020 that includes:**
   a. **Finalized energy and emissions model;**

**b. A financial and affordability analysis of the model to identify the investment required, the net present value, the return on investment, marginal abatement costs, and employment impacts;**

**c. Detailed descriptions of the proposed Energy Evolution projects listed in this report including roles and responsibilities, timelines, municipal authorities and barriers to implementation, equity and inclusion considerations, and resourcing needs;**

**d. A proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus once the value of the dividend surplus is known;**

**6. Delegate authority to the Council Sponsors Group on Climate Change to provide the Mayor with a list of priority areas and activities, which are consistent with the Council-approved Climate Change Master Plan, to allow the Mayor to advocate with the provincial and federal governments on program funding, co-delivery opportunities and related policy and regulatory supports necessary to implement the Climate Change Master Plan priority projects, as appropriate; and**

**7. Approve the spending plan in Document 13 and summarized in this report for $210,000 of unspent 2017 and 2018 Hydro Ottawa Dividend Surplus funds.**

## RECOMMANDATIONS DU COMITÉ

**Que le Conseil :**

**1. reçoive les inventaires des émissions de gaz à effet (GES) de serre ci-joints en tant que Document 3 et comme décrit dans le présent rapport;**

**2. approuve :**

**a. les nouveaux objectifs municipaux pour 2025, 2030 et 2040 visant à réduire les émissions de GES de 100% par rapport aux niveaux de 2012 d'ici 2040;**

**b. les nouveaux objectifs municipaux pour 2025, 2030, 2040 et 2050 visant à réduire les émissions de GES de 100% par rapport aux niveaux de 2012 d'ici 2050;**

**3. approuve le Plan directeur sur les changements climatiques ci-joint en tant que Document 4 et comme décrit dans le présent rapport;**

**4. reçoive une mise à jour de l'état du projet Évolution énergétique, y compris l'ébauche du modèle d'énergie et d'émissions, et une liste provisoire des projets proposés qui seront développés plus à fond dans le cadre du rapport final sur le projet Évolution énergétique ci-joint en tant que Documents 5, 6 et 7 et comme décrit dans le présent rapport;**

**5. demande au personnel de présenter le rapport final sur le projet Évolution énergétique : Stratégie de transition vers des technologies énergétiques communautaires d'Ottawa au T2 de 2020, ce rapport final comprenant :**

**a. le modèle finalisé d'énergie et d'émissions;**

**b. une analyse financière et de l'abordabilité du modèle afin de déterminer les investissements nécessaires, la valeur actuelle nette, le rendement de l'investissement, les coûts marginaux de réduction et les répercussions sur les emplois;**

**c. la description détaillée des projets Évolution énergétique proposés énumérés dans le présent rapport, y compris les rôles et les responsabilités, les échéanciers, les autorités municipales et les obstacles à la mise en œuvre, les**

**considérations en matière d'équité et d'inclusion ainsi que les besoins en ressources;**

**d. un plan de dépenses proposées pour les dividendes excédentaires de 2019 d'Hydro Ottawa une fois la valeur de ces dividendes connue;**

**6. délègue au** G**roupe de conseillers parrains sur les changements climatiques le pouvoir de fournir au maire une liste des secteurs et** des **activités prioritaires conformes au Plan directeur sur les changements climatiques approuvé par le Conseil afin de permettre au maire de débattre avec les gouvernements fédéral et provincial du financement du programme, des possibilités de co-exécution et des mesures de soutien sous forme de politiques et de réglementation nécessaires à la mise en** œuvre **des projets prioritaires du Plan directeur sur les changements climatiques, au besoin, et**

**7. approuve le plan de dépenses dans le Document 13**, **également résumé dans le présent rapport**, **pour 210 000 dollars de dividendes excédentaires d'Hydro Ottawa pour 2017 et 2018 non dépensés.**

DIRECTION TO STAFF:

That staff immediately accelerate a climate lens with regard to city procurement decisions.

DIRECTIVES AU PERSONNEL :

Que le personnel accélère sans délai l'adoption d'une optique climatique dans les décisions d'approvisionnement de la Ville.

DOCUMENTATION

1. Director's Report, Economic Development and Long Range Planning dated 4 December 2019 (ACS2019-PIE-EDP-0053).

   Rapport du Directeur, Développement économique et Planification à long terme, daté le 4 décembre 2019 (ACS2019-PIE-EDP-0053).

2. Extract of Draft Minute, 17 December 2019.

   Éxtrait de l'ébauche du procès-verbal, le 17 décembre 2019.

**Report to**
**Rapport au:**

**Standing Committee on Environmental Protection, Water and Waste Management**
**Comité permanent de la protection de l'environnement, de l'eau et de la gestion des déchets**
**17 December 2019 / 17 décembre 2019**

**and Council**
**et au Conseil**
**29 January 2020 / 29 janvier 2020**

**Submitted on December 4, 2019**
**Soumis le 4 décembre 2019**

**Submitted by**
**Soumis par:**
**Don Herweyer**
**Director / Directeur**
**Economic Development and Long Range Planning / Développement économique et Planification à long terme**
**Planning, Infrastructure and Economic Development Department / Direction générale de la planification, de l'infrastructure et du développement économique**

**Contact Person**
**Personne ressource:**
**Andrea Flowers, Senior Project Manager – Environmental Programs, Planning, Infrastructure and Economic Development Department**
**(613) 580-2424, 16081, andrea.flowers@ottawa.ca**

**Ward**: CITY WIDE / À L'ÉCHELLE DE LA VILLE

**File Number**: ACS2019-PIE-EDP-0053

**SUBJECT: Climate Change Master Plan and the Energy Evolution Model**

**OBJET: Plan directeur sur les changements climatiques et modèle Évolution énergétique**

**REPORT RECOMMENDATIONS**

**That the Standing Committee on Environmental Protection, Water, and Waste Management recommend that Council:**

1. **Receive the 2017 and 2018 Greenhouse Gas (GHG) Inventories attached as Document 3 and as outlined in this report;**

2. **Approve:**

    a. **New 2025, 2030 and 2040 corporate targets to reduce GHG emissions 100% by 2040 below 2012 levels;**

    b. **New 2025, 2030, 2040 and 2050 community targets to reduce GHG emissions 100% by 2050 below 2012 levels;**

3. **Approve the Climate Change Master Plan attached as Document 4 and as outlined in this report;**

4. **Receive a project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report attached, as Documents 5, 6 and 7 and as outlined in this report;**

5. **Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in Q2 2020 that includes:**

    a. **Finalized energy and emissions model;**

    b. **A financial and affordability analysis of the model to identify the investment required, the net present value, the return on investment, marginal abatement costs, and employment impacts;**

    c. **Detailed descriptions of the proposed Energy Evolution projects listed in this report including roles and responsibilities, timelines,**

**municipal authorities and barriers to implementation, equity and inclusion considerations, and resourcing needs;**

**d. A proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus once the value of the dividend surplus is known;**

**6. Delegate authority to the Council Sponsors Group on Climate Change to provide the Mayor with a list of priority areas and activities, which are consistent with the Council-approved Climate Change Master Plan, to allow the Mayor to advocate with the provincial and federal governments on program funding, co-delivery opportunities and related policy and regulatory supports necessary to implement the Climate Change Master Plan priority projects, as appropriate; and**

**7. Approve the spending plan in Document 13 and summarized in this report for $210,000 of unspent 2017 and 2018 Hydro Ottawa Dividend Surplus funds.**

**RECOMMANDATIONS DU RAPPORT**

**Que le Comité permanent de la protection de l'environnement, de l'eau et de la gestion des déchets recommande que le Conseil :**

**1. reçoive les inventaires des émissions de gaz à effet (GES) de serre ci-joints en tant que Document 3 et comme décrit dans le présent rapport;**

**2. approuve :**

**a. les nouveaux objectifs municipaux pour 2025, 2030 et 2040 visant à réduire les émissions de GES de 100% par rapport aux niveaux de 2012 d'ici 2040;**

**b. les nouveaux objectifs municipaux pour 2025, 2030, 2040 et 2050 visant à réduire les émissions de GES de 100% par rapport aux niveaux de 2012 d'ici 2050;**

**3. approuve le Plan directeur sur les changements climatiques ci-joint en tant que Document 4 et comme décrit dans le présent rapport;**

**4. reçoive une mise à jour de l'état du projet Évolution énergétique, y compris l'ébauche du modèle d'énergie et d'émissions, et une liste provisoire des projets proposés qui seront développés plus à fond dans le cadre du rapport final sur le projet Évolution énergétique ci-joint en tant que Documents 5, 6 et 7 et comme décrit dans le présent rapport;**

**5. demande au personnel de présenter le rapport final sur le projet Évolution énergétique : Stratégie de transition vers des technologies énergétiques communautaires d'Ottawa au T2 de 2020, ce rapport final comprenant :**

**a. le modèle finalisé d'énergie et d'émissions;**

**b. une analyse financière et de l'abordabilité du modèle afin de déterminer les investissements nécessaires, la valeur actuelle nette, le rendement de l'investissement, les coûts marginaux de réduction et les répercussions sur les emplois;**

**c. la description détaillée des projets Évolution énergétique proposés énumérés dans le présent rapport, y compris les rôles et les responsabilités, les échéanciers, les autorités municipales et les obstacles à la mise en œuvre, les considérations en matière d'équité et d'inclusion ainsi que les besoins en ressources;**

**d. un plan de dépenses proposées pour les dividendes excédentaires de 2019 d'Hydro Ottawa une fois la valeur de ces dividendes connue;**

**6. délègue au Groupe de conseillers parrains sur les changements climatiques le pouvoir de fournir au maire une liste des secteurs et des activités prioritaires conformes au Plan directeur sur les changements climatiques approuvé par le Conseil afin de permettre au maire de débattre avec les gouvernements fédéral et provincial du financement du programme, des possibilités de co-exécution et des mesures de soutien sous forme de politiques et de réglementation nécessaires à la mise en**

œuvre **des projets prioritaires du Plan directeur sur les changements climatiques, au besoin, et**

7. **approuve le plan de dépenses dans le Document 13**, **également résumé dans le présent rapport**, **pour 210 000 dollars de dividendes excédentaires d'Hydro Ottawa pour 2017 et 2018 non dépensés.**

## EXECUTIVE SUMMARY

### Assumptions and Analysis

This report includes:

1. Results of the 2017 and 2018 greenhouse gas (GHG) Inventories.
2. Recommended short, medium and long-term GHG emission reduction targets for the City of Ottawa and the community as a whole.
3. The proposed Climate Change Master Plan (formerly the Air Quality and Climate Change Management Plan), including a description, drivers and status update for each of the eight priority actions proposed under the Climate Change Master Plan.
4. A project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report.
5. Proposed spending plan for the remaining portion of 2017 and 2018 Hydro Ottawa Dividends.

Worldwide, climate scientists agree that fast rising global temperatures have created a climate crisis[1]. The World Health Organization warns that "climate change is the

[1] Carrington, D. (2019) Climate Crisis: 11,000 scientists warn of 'untold suffering', *The Guardian*, 5 Nov. https://www.theguardian.com/environment/2019/nov/05/climate-crisis-11000-scientists-warn-of-untold-suffering

greatest threat of the 21st century".[2] In 2018, the Intergovernmental Panel on Climate Change (IPCC) released The Special Report on Global Warming of 1.5°C providing the scientific evidence for the need to limit global warming to 1.5ºC.The IPCC states that this is possible but "would require rapid, far-reaching and unprecedented changes in all aspects of society"[3].

In April 2019, City Council declared a Climate Emergency for the purposes of naming, framing and deepening our commitment to protecting our economy, our ecosystems, and our community from climate change. As part of this motion, Council directed staff to analyze how Ottawa's GHG emission reduction targets compare to IPCC targets for limiting global warming to 1.5ºC. Council further directed staff to identify new concrete actions to achieve GHG emission reduction targets (with resource implications) and set five-year priorities for both mitigation and adaptation.

The current long-term community target is to reduce emissions by 80% by 2050 below a 2012 baseline level. Between 2012 and 2018, community emissions decreased by 14% and corporate emissions decreased by 36%. To align with the IPCC, Ottawa would need to set targets to reduce city-wide emissions by 68% by 2030 and 100% by 2050.

As identified by the IPCC, urgent, unprecedented action and investment will be required to achieve these targets and to build resilience in Ottawa. The Climate Change Master Plan is the framework for how Ottawa will mitigate and adapt to climate change over the next three decades. The vision of the Climate Change Master Plan is to take unprecedented, collective action that transitions Ottawa to a clean, renewable and resilient city by 2050. It sets guiding principles, goals, GHG emission reduction targets, and eight priority actions for the next five years (2020-2025) that can be embedded into City business.

The eight priority actions in the new Climate Change Master Plan are:

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[2] World Health Organization (WHO). 2016. WHO Director-General Keynote address at the Human Rights Council panel discussion on climate change and the right to health.
[3] IPCC Press Release. Summary for Policymakers of IPCC Special Report on Global Warming of 1.5ºC approved by governments. October 8, 2018.
https://www.ipcc.ch/site/assets/uploads/2018/11/pr_181008_P48_spm_en.pdf

1. Implement Energy Evolution: Ottawa's Community Energy Transition Strategy.
2. Undertake a climate vulnerability assessment and develop a Climate Resiliency Strategy.
3. Apply a climate lens to the new Official Plan and its supporting documents.
4. Apply a climate lens to asset management and capital projects.
5. Explore the feasibility of setting corporate carbon budgets, including piloting them in a small portion of the organization.
6. Explore carbon sequestration methods and the role of green infrastructure.
7. Encourage private action through education, direct and indirect incentives, municipal support, and advocacy for support of individuals and private organizations by senior levels of government.
8. Develop a governance framework to build corporate and community capacity, align priorities, and share accountability in tackling climate change.

**Financial Implications**

A financial analysis of capital costs, operational costs/savings, and revenues are required to inform the action and investment necessary to meet the short, mid, and long-term GHG targets. This work will be done with municipal and community sector experts and will be used to inform future annual budget processes, spending plans for the 2018–2022 Term of Council Hydro Ottawa Dividend Surplus, the Long-Term Financial Plan, and capital investments required from other levels of government, the private sector, residents and the broader public sector.

Energy Evolution proposes 20 projects to be undertaken within the next five years. Of these 20 projects, it is anticipated that approximately half can be advanced using primarily City resources while the other half will require a combination of City and community partner resources. The final report for Energy Evolution will be brought forward in Q2 2020 and include the final energy and emissions model, detailed financial

analysis of the model, detailed descriptions of the proposed projects listed in this report and a proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus.

**Consultation/Input**

The Climate Change Master Plan was developed with input from city staff. In the last three years, staff have focused on key stakeholder and public input to develop three priority actions: Energy Evolution, the Climate Resiliency Strategy and the new Official Plan. Input received through these projects has informed the Climate Change Master Plan and the eight priority actions.

An Interdepartmental Working Group was established with representatives from eight departments and Ottawa Public Health to provide input on the development of the Climate Change Master Plan and its eight priority actions. In addition to three working group meetings in 2019, staff met with departments upon request, including presentations to Ottawa Public Health and Public Works and Environmental Services Departmental Leadership Teams.

On August 13, 2019, staff convened the inaugural meeting of the Climate Change Council Sponsors Group which was established through Council's declaration of a climate emergency. Staff met with the Climate Change Council Sponsors Group four times. Staff also provided two updates to the Environmental Stewardship Advisory Committee.

**SOMMAIRE**

**Hypothèses et analyse**

Le présent rapport comprend :

1. Les résultats des inventaires des émissions de gaz à effet de serre (GES) pour 2017 et 2018.

2. Les objectifs de réduction des émissions de GES recommandés à court, moyen et long terme pour la Ville d'Ottawa et la communauté dans son ensemble.

3. Le Plan directeur sur les changements climatiques proposé (anciennement appelé Plan de gestion de la qualité de l'air et des changements climatiques), comprenant une description, les éléments clés et un rapport d'étape pour chacune des huit mesures prioritaires proposées en vertu du Plan directeur sur les changements climatiques.

4. Une mise à jour de l'état du projet Évolution énergétique, y compris l'ébauche du modèle d'énergie et d'émissions, et une liste provisoire des projets proposés qui seront développés plus à fond dans le cadre du rapport final sur le projet Évolution énergétique.

5. Le plan de dépenses proposé pour le reste des dividendes d'Hydro Ottawa de 2017 et 2018.

Dans le monde entier, les scientifiques estiment que la hausse rapide des températures mondiales a créé une crise climatique[4]. L'Organisation mondiale de la santé prévient que « le changement climatique représente la plus grande menace du 21e siècle ».[5] En 2018, le Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC) a publié le Rapport spécial sur les conséquences d'un réchauffement planétaire de 1,5 °C fournissant la preuve scientifique de la nécessité de limiter le réchauffement climatique à 1,5 ºC. Le GIEC affirme que c'est possible, mais qu'« il faudrait modifier rapidement, radicalement et de manière inédite tous les aspects de la société »[6].

En avril 2019, le Conseil municipal a déclaré une urgence climatique aux fins de nommer, encadrer et approfondir notre engagement à protéger notre économie, nos écosystèmes et notre communauté contre les changements climatiques. Dans le cadre

[4] Carrington, D. (2019) Climate Crisis: 11,000 scientists warn of 'untold suffering', *The Guardian*, 5 Nov. https://www.theguardian.com/environment/2019/nov/05/climate-crisis-11000-scientists-warn-of-untold-suffering

[5] Organisation mondiale de la santé (OMS) 2016, discours principal du directeur général de l'OMS lors de la discussion en groupe du Conseil des droits de l'homme portant sur les changements climatiques et le droit à la santé.

[6] Communiqué de presse du GIEC. Approbation par les gouvernements du Résumé à l'intention des décideurs relatif au Rapport spécial du GIEC sur les conséquences d'un réchauffement planétaire de 1,5 °C, le 8 octobre 2018. https://www.ipcc.ch/site/assets/uploads/2018/11/pr_181008_P48_spm_fr.pdf

de cette motion, le Conseil a demandé au personnel d'analyser la manière dont les objectifs de réduction des émissions de GES d'Ottawa se comparent aux cibles du GIEC visant à limiter le réchauffement climatique à 1,5 ºC. Il a en outre demandé au personnel d'établir de nouvelles mesures concrètes pour atteindre les objectifs de réduction des émissions de GES (et leur incidence sur les ressources) et de définir des priorités d'atténuation des changements climatiques et d'adaptation à ceux-ci pour cinq ans.

L'objectif communautaire à long actuel consiste à réduire les émissions de GES de 80% par rapport aux niveaux de 2012 d'ici 2050. Entre 2012 et 2018, les émissions communautaires ont diminué de 14%, et les émissions municipales ont diminué de 36%. Pour être conforme aux cibles du GIEC, Ottawa devrait fixer des objectifs visant à réduire les émissions à l'échelle de la ville de 68% d'ici 2030 et de 100% d'ici 2050.

Comme l'a déterminé le GIEC, des mesures et des investissements urgents et sans précédent seront nécessaires pour atteindre ces objectifs et renforcer la résilience à Ottawa. Le Plan directeur sur les changements climatiques est le cadre qui orientera les interventions d'Ottawa afin d'atténuer les effets des changements climatiques et de s'y adapter au cours des trois prochaines décennies. La vision du Plan directeur sur les changements climatiques consiste à prendre des mesures inédites et collectives pour transformer Ottawa en une ville propre, écologique et résiliente d'ici 2050. Le plan définit des lignes directrices, des objectifs, des cibles de réduction d'émissions de GES et huit mesures prioritaires pour les cinq prochaines années (2020 à 2025) qui peuvent être intégrées aux activités de la Ville.

Voici les huit mesures prioritaires du nouveau Plan directeur sur les changements climatiques :

1. Mettre en œuvre la stratégie « Évolution énergétique : Stratégie de transition vers des technologies énergétiques communautaires d'Ottawa ».
2. Évaluer la vulnérabilité aux changements climatiques et élaborer une stratégie de résilience.

3. Appliquer l'optique des changements climatiques au nouveau Plan officiel de la Ville et ses documents complémentaires.

4. Appliquer à la gestion des biens et aux projets d'immobilisation l'optique des changements climatiques.

5. Étudier la faisabilité d'établir des budgets carbone pour la municipalité, y compris leur mise à l'essai dans une petite partie de l'organisation.

6. Examiner des méthodes de séquestration du carbone et le rôle des infrastructures vertes.

7. Encourager les initiatives privées par la sensibilisation, les incitatifs directs et indirects, le soutien municipal et en cherchant à obtenir des mesures de soutien pour les personnes et les organisations privées auprès des ordres de gouvernement supérieurs.

8. Définir une structure de gouvernance afin de renforcer la capacité de la municipalité et de la collectivité à faire face aux changements climatiques, d'harmoniser les priorités des divers intervenants et de partager la responsabilité.

**Répercussions financières**

Il faut mener l'analyse financière des dépenses en immobilisations, des coûts et des économies opérationnels et des recettes pour éclairer les mesures à prendre et les investissements à consacrer afin d'atteindre les cibles à court, à moyen et à long termes dans la réduction des émissions de GES. Ces travaux, qui se dérouleront avec des experts du secteur municipal et du secteur communautaire, serviront à éclairer les processus d'établissement du budget annuel, les plans de dépenses pour l'excédent des dividendes d'Hydro Ottawa pour le mandat du Conseil 2018-2022, le Plan financier à long terme et les investissements à consacrer aux infrastructures par les autres ordres de gouvernement, le secteur privé, les résidents et l'ensemble du secteur public.

Dans le cadre de l'Évolution de l'énergie, nous proposons de réaliser 20 projets dans les cinq prochaines années. Parmi ces 20 projets, on s'attend à pouvoir en réaliser

environ la moitié en faisant appel essentiellement aux ressources de la Ville et l'autre moitié grâce à un ensemble de ressources de la Ville et des partenaires communautaires. Le rapport final de l'Évolution de l'énergie, qui sera déposé au deuxième trimestre de 2020, comprendra le modèle définitif de gestion de l'énergie et des émissions, une analyse financière détaillée du modèle, la description détaillée des projets proposés et énumérés dans ce rapport, ainsi que le plan proposé pour les dépenses à financer grâce à l'excédent des dividendes d'Hydro Ottawa pour 2019.

Consultation et commentaires

Le Plan directeur sur les changements climatiques a été élaboré avec la participation du personnel de la Ville. Au cours des trois dernières années, le personnel a mis l'accent sur la participation du public et des intervenants clés afin d'élaborer trois mesures prioritaires : la stratégie Évolution énergétique, la stratégie de résilience face aux changements climatiques et le nouveau Plan officiel. Les commentaires reçus par le biais de ces projets ont orienté le Plan directeur sur les changements climatiques et les huit mesures prioritaires.

Un groupe de travail inter-directions générales a été créé, composé de représentants de huit directions générales et de Santé publique Ottawa, pour formuler ses commentaires et suggestions sur l'élaboration du Plan directeur sur les changements climatiques et ses huit mesures prioritaires. En plus des trois réunions du groupe de travail en 2019, le personnel a rencontré les directions générales sur demande, notamment en faisant des présentations à l'équipe de direction de Santé publique Ottawa et de la Direction générale des travaux publics et de l'environnement.

Le 13 août 2019, le personnel a convoqué la première réunion du Groupe de conseillers parrains sur les changements climatiques qui a été créé à la suite de la déclaration de l'état d'urgence climatique par le Conseil. Le personnel a rencontré le Groupe de conseillers parrains sur les changements climatiques à quatre reprises. Le personnel a également présenté deux mises à jour au Comité consultatif sur la gérance environnementale.

## BACKGROUND

### Council's Prior Decisions and Directions

In May 2014, Council approved the update to the Air Quality and Climate Change Management Plan (AQCCMP), a framework for how Ottawa will mitigate and adapt to climate change over the next three decades (ACS2014-COS-ESD-0011). The AQCCMP set new goals and objectives, a short-term community greenhouse gas (GHG) emissions reduction target, and performance measures. It also mandated that a review and update of the AQCCMP be undertaken within five years.

In July 2015, the AQCCMP was identified as a strategic priority within the 2015-2018 City Strategic Plan and gave budgetary approval to initiatives that supported the goals and objectives of the AQCCMP. Annual status updates of the AQCCMP were provided to Environment and Climate Protection Committee in 2016, 2017, and 2018.

In July 2015, development of a Renewable Energy Strategy was also identified as a strategic priority within the 2015-2018 City Strategic Plan. With this approval, Council directed staff to complete a baseline analysis of energy supply and demand within the City of Ottawa and assess options, in collaboration with community partners, for all partners to advance energy conservation, energy efficiency and renewable energy generation within their respective areas of control/influence.

In February 2016, City Council approved a motion to set a long-term community target to reduce GHG emissions by 80% below 2012 baseline levels by 2050 (ACS2016-CMR-ENV-0001). Staff worked with key stakeholders and community partners to identify ways to reduce community-wide emissions in line with the new long-term target. As part of this process, the initiative was re-named Energy Evolution: Ottawa's Energy Evolution Strategy. Late in 2016, Energy Evolution was transferred to the newly formed Planning, Infrastructure and Economic Development Department.

In February 2017, the Environment and Climate Protection Committee (ECPC) received an update on Energy Evolution (ACS2017-PIE-PS-0024).

In December 2017, Council received Energy Evolution Phase 1 and directed staff to initiate the recommendations in the report and complete Phase 2 of the Energy Evolution Strategy (ACS2017-PIE-EDP-0048).

In June 2018, City Council approved a motion to set a short-term corporate target to reduce GHG emissions by 20% below 2012 baseline levels by 2024 (ACS2018-CCS-ECP-0005).

In March 2019, City Council approved a motion to undertake annual GHG emission inventory reporting (Motion No 9/6) and approved that any surplus over the Hydro Dividend received in the 2018-2022 Term of Council be directed toward energy efficiency, conservation or renewable energy programs within Ottawa (Motion No 9/3).

In April 2019, City Council approved a motion to declare a climate emergency (ACS2019-CCS-ENV-0005) which included the following directions to Council and staff:

1. Officially declare a climate emergency for the purposes of naming, framing, and deepening our commitment to protecting our economy, our ecosystems, and our community from climate change;

2. Establish a Council Sponsors Group comprised of representatives from the Standing Committee on Environmental Protection, Water and Waste Management, Planning Committee, Transportation Committee, Transit Commission, the Ottawa Board of Health and the Councillor Liaison of the Environmental Stewardship Advisory Committee;

3. Direct City staff to include the following in the review and update of the Air Quality and Climate Change Management Plan (AQCCMP):

    a) An analysis of how the AQCCMP's long term target to reduce GHG emissions 80% below 2012 levels by 2050 compares to the IPCC's targets for limiting global warming to 1.5ºC.

    b) Midterm (2030) corporate and community GHG emission reduction targets.

c) Climate Change mitigation and adaptation priorities for next five years (2019-2024) to embed climate change considerations across all elements of City business.

4. Direct City staff to include the following in the Energy Evolution Final Report:

   a) Status update of Energy Evolution Phase 1 actions.

   b) New concrete actions and resource implications (staff and financial) to achieve GHG emission reduction targets.

   c) Use an equity and inclusion lens in the prioritization of actions.

   d) Funding and savings options for the City when implementing emission reductions.

5. Direct City staff to report back, within the 2019 calendar year, on a spending plan for the Hydro Ottawa Dividends Surplus that would help reduce community and corporate GHG emissions beyond the scope of the City's current climate targets while also saving money.

6. Direct City staff to complete a vulnerability assessment and develop a climate resiliency strategy to reduce the impacts of a changing climate.

7. Recognize climate change as a strategic priority in the City's strategic plan and accompanying budget directions for the remaining Term of Council.

8. Work with senior levels of government to accelerate ambition and action to meet the urgency of climate change and provide additional resources for municipalities and the public to reduce their GHG emissions and build resiliency to climate impacts.

In June 2019, City Council approved that any surplus over the 2018 Hydro Dividend budgeted at $20 million be directed to the tax stabilization fund and be applied to the costs associated with the City's response to the two environmental emergencies experienced to date this year, less $500,000 already committed by Council through motion NO EPWWM 01/07 (Motion 16/2).

In September 2019, the Board of Health received, for information, an overview of Ottawa Public Health's activities in support of climate action (ACS2019-OPH-HPS-0002).

**Overview of the Report**

This report includes:

1. Results of the 2017 and 2018 greenhouse gas (GHG) Inventories
2. Recommended short, medium and long-term GHG emission reduction targets for the City of Ottawa and the community as a whole
3. The proposed Climate Change Master Plan (formerly the Air Quality and Climate Change Management Plan), a description, drivers and status update for each of the eight priority actions proposed under the Climate Change Master Plan
4. A project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report
5. Proposed spending plan for the remaining portion of 2017 and 2018 Hydro Ottawa Dividends

The Climate Change Master Plan serves as the overarching framework for the City to reduce greenhouse emissions and build resiliency to climate change. Guided by the principles and targets, it identifies eight priority actions for the next five years.

**DISCUSSION**

**Global and National Context**

Worldwide, climate scientists agree that the fast-rising global temperature has created a climate emergency[7]. In 2016, the Paris Agreement entered into force with the aim of

[7] Ripple, W. J., Wolf, C., Newsome, T. M., Barnard, P., & Moomaw, W. (2019). World Scientists' Warning of a Climate Emergency. *BioScience*, biz088, https://doi.org/10.1093/biosci/biz088

limiting global temperatures increases to less than 2°C above pre-industrial levels and to strive to limit global temperature increase even further to 1.5ºC[8]. The World Health Organization warns that "climate change is the greatest threat of the 21st century".[9] In 2018, the Intergovernmental Panel on Climate Change (IPCC) released The Special Report on Global Warming of 1.5ºC advocating for the need to limit global warming to 1.5ºC to avoid catastrophic impacts[10]. Scientists estimate that global warming is likely to reach 1.5ºC as early as 2030[11]. That means that there are about 10 years to make significant change if average global temperature increase is to be limited to 1.5ºC.[12] According to the IPCC, limiting global warming to 1.5ºC is possible, but it will "require rapid, far reaching and unprecedented changes in all aspects of society"[13]. In April 2019, Environment and Climate Change Canada released Canada's Changing Climate Report stating that, on average, Canada is warming at twice the rate of the rest of the world and projects that the effects of warming will intensify in the future. The latest data from Climate Atlas of Canada indicates that over the coming decades, Ottawa will experience considerably wetter springs and winters, much warmer winters, and a significant increase in very hot days (over 30°C)[14]. These changing patterns in the local climate[15] will have significant and direct impacts on Ottawa's health and safety[16], infrastructure, local economy and environment.

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[8] UNFCC. The Paris Agreement. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

[9] World Health Organization (WHO). 2016. WHO Director-General Keynote address at the Human Rights Council panel discussion on climate change and the right to health.

[10] IPCC Press Release. Summary for Policymakers of IPCC Special Report on Global Warming of 1.5ºC approved by governments. October 8, 2018. https://www.ipcc.ch/site/assets/uploads/2018/11/pr_181008_P48_spm_en.pdf

[11] ibid

[12] ibid

[13] ibid

[14] Climate Atlas of Canada. Region: OTTAWA. July 10, 2019. https://climateatlas.ca/report_v2/grid/299

[15] Staff are currently working with the National Capital Commission, Environment and Climate Change Canada and technical consultants to develop more detailed climate projections for the National Capital Region to inform ongoing vulnerability assessments and climate resiliency planning.

[16] Ontario Climate Change and Health Modelling Study Report. http://www.health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_health_modelling_study.pdf

> "The effects of widespread warming are evident in many parts of Canada and are projected to intensify in the future. The rate and magnitude of climate change under high versus low emission scenarios project two very different futures for Canada. Scenarios with large and rapid warming illustrate the profound effects on Canadian climate of continued growth in greenhouse gas emissions. Scenarios with limited warming will only occur if Canada and the rest of the world reduce carbon emissions to near zero early in the second half of the century and reduce emissions of other greenhouse gases substantially."
>
> - Canada's Changing Climate Report (2019)[17]

**Climate Emergency Declarations**

Since the IPCC report came out in 2018, over 900 (and counting) cities and jurisdictions around the world have declared a climate emergency, representing more than 200 million citizens.[18] The Canadian House of Commons declared a national climate emergency in June 2019 and in July 2019, the Assembly of First Nations, representing 634 First Nation communities across Canada declared a global climate emergency. In Canada, over 440 municipal and regional governments have declared climate emergencies including Vancouver, Edmonton, Toronto, Kingston, Ottawa, Halifax, and over 390 Quebec Councils (including Montreal).

**The Role of Municipalities**

We live in a rapidly urbanizing world. In the next 30 years, some 70 million people will move to urban areas every single year. By 2050, two-thirds of the global population will live in cities[19]. The Federation of Canadian Municipalities estimates that cities influence roughly half of Canada's greenhouse gas emissions and own approximately 60% of the

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[17] Environment and Climate Change Canada: CANADA'S Changing Climate Report (2019), Executive Summary https://changingclimate.ca/CCCR2019/

[18] Climate Emergency Declaration. Climate emergency declarations in 901 jurisdictions and local governments cover 200 million citizens. July 31, 2019. https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/

[19] Carbon Disclosure Project. https://www.cdp.net/en/research/global-reports/cities-at-risk

public infrastructure that supports our economy and quality of life.[20] Municipalities have an essential role in local solutions to reduce emissions and prepare for climate impacts.

As a local authority with powers handed down by the Province, municipalities have direct control over a range of services that touch people's everyday lives and affect how energy is consumed, including housing, transportation planning and public transit, water and sewer infrastructure, and waste management. Municipalities control where and how growth will occur through the designation of land use and in the development and enforcement of Zoning By-laws. Building construction is also controlled through Site Plan Control measures, urban design guidelines and Building Code enforcement.

In carrying out its municipal duties, the City partners with several associated agencies, including Conservation Authorities, utility companies, the National Capital Commission, Ottawa Community Housing Corporation, as well as other levels of government and the private sector throughout the National Capital region.

In addition to its regulatory powers, the City also plays a key role in bringing community stakeholders together to facilitate discussions and foster collaboration in planning and strategizing integrated approaches to achieve long term energy sustainability goals and build local resiliency. Through education and civic engagement, the City can explain the benefits and promote action towards a long-term sustainable future.

Despite the important role that municipalities play in mobilizing forces toward a low carbon resilient future, there are limitations on the extent of power that can be exerted by local government. This is due in part to the limit on financial resources available to municipalities and jurisdictional barriers. Ottawa's ability to mitigate and adapt to climate change is therefore contingent upon senior levels of government, stakeholders and partners to commit to action within their specific jurisdictions (i.e. utilities, housing, development industry, etc.).

**Jurisdictional considerations at the Municipal, Provincial and Federal level**

[20] Federation of Canadian Municipalities. https://fcm.ca/en/focus-areas/climate-and-sustainability

**Land Use**

Municipalities have primary responsibility for land use planning in Ontario working within the parameters of the Planning Act. The Provincial Policy Statement (PPS) is issued under Section 3 of the *Planning Act* and all decisions affecting land use planning matters must be consistent with the PPS. ***Bill 68, Modernizing Ontario's Municipal Legislation Act*****,** passed in 2017 added climate change as a matter of provincial interest for decision makers to address in carrying out their responsibilities under the *Planning Act*. The changes give broad powers to municipalities to pass by-laws respecting climate change and to participate in long term planning for energy use. The proposed 2019 PPS requires municipalities to prepare for the local impacts of a changing climate and mitigate the risks to human health, safety, property and environment.

The City's principal land use planning document is the Official Plan, which is currently in the process of being updated. The Zoning By-law and various other by-laws implement the Official Plan and they will be updated following the completion of the new Official Plan.

**Regulation of Buildings**

The way in which buildings are constructed and renovated is regulated by the Province through the Ontario Building Code (O. Reg. 332/12)[21], but is administered at the local level. The Ontario Building Code is based on the National Building Code of Canada but remains solely within provincial jurisdiction.

The National Energy Code[22] which the Provincial code references is a guidance document informing building construction. It is due for an update and it is expected to be released for public comment early 2020. The Provincial code will likely undergo an update following this process.

[21] Queen's Printer for Ontario. (2017). O. Reg. 332/12: Building Code https://www.ontario.ca/laws/regulation/120332

[22] https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-development-process/public-reviews-proposed-changes-codes-canada-publications

Under specific circumstances, the Province has granted municipalities the powers to adopt more stringent building requirements. For example, municipalities are permitted to require green roofs or alternative roof surfaces in certain circumstances outlined in the Building Code.

**Energy Generation**

The Province is the regulator and the primary owner of the bulk of the energy generation system in Ontario. A number of municipal and private energy generation operators do contribute power to the grid, but it is a highly regulated environment.

Hydro Ottawa Holding Inc. is fully owned by the City. Portage Power, formally known as Energy Ottawa Inc., is a subsidiary of Hydro Ottawa and is the largest municipally owned producer of green power in Ontario.[23] Portage Power and its subsidiaries currently have the following green energy operations:

- Sixteen run-of-the-river hydroelectric facilities, including six stations in Ottawa's downtown core;
- Hydroelectric generation capacity of **84.6** megawatts at Chaudière Falls;
- Landfill gas-to-energy generation capacity of **10.2** megawatts through joint ventures at the Trail Road Landfill in Ottawa and Lafleche Landfill in Moose Creek, Ontario;
- Fourteen solar installations across the City of Ottawa; and
- Ten hydroelectric stations located in Eastern Ontario and nearby New York State that have a total combined output of **31** megawatts

[23] https://hydroottawa.com/about-us/governance/overview

**Transportation and Mobility**

The federal government regulates the automotive industry and fuel standards. New proposed fuel standard regulations are expected to be released in early 2020, followed by consultations on the proposal. Final regulations are planned for early 2021. [24]

The province sets emissions standards for all vehicles in Ontario and has a regulatory role in the provision of potentially controversial Transportation Demand Management measures such as road user fees.

The City's Transportation Master Plan (TMP) set outs the transportation growth management policies along with the planning, funding, and implementation of its walking, cycling, transit and road networks. The update of the TMP is underway with planned completion by April 2022.

The City operates the traffic management system, has control over the allocation of municipal roadway space for different users and sets parking fees, all of which can influence travel behaviour. The City also has control over the procurement and operation of its own fleet, including OC Transpo's conventional light rail and bus transit operations and ParaTranspo.

**Design and Operation of Public Infrastructure**

The City designs, constructs, operates and manages all municipal infrastructure, including roads, sidewalks, bicycle lanes, multi-use pathways, parks, community centres, municipal administration buildings, water distribution and wastewater collection systems and stormwater management systems.

In addition to the Transportation Master Plan, the City's primary planning tools for its other assets include the Infrastructure Master Plan and the Greenspace Master Plan. Both of these plans are being updated in conjunction with the new Official Plan.

[24] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard.html

**Flood Mitigation**

With respect to flooding, the Provincial Policy Statement (PPS) requires municipalities to direct development away from hazardous areas, including flood-prone areas, in order to protect public health and safety. The Ministry of Natural Resources and Forestry provides technical guidance on managing riverine flooding and flood hazards, including flood risk mapping. As per the *Emergency Management and Civil Protection Act,* municipalities are responsible to identify and assess potential hazards in their community. The *Conservation Authorities Act* delegates authority to conservation authorities to regulate development activities that can create or increase natural hazards, including flooding. The province appointed a special advisor on flooding in July 2019 to recommend opportunities to improve the existing flood policy framework. Several recommendations in the advisor's report[25] relate to climate change, including undertaking a review of the flood event standards to provide for current science and climate change.

**Commercial/Industrial Emissions**

The Province is the regulator of commercial and industrial emissions in Ontario through setting emissions standards and issuing Environmental Compliance Approvals.

**Home Heating Emissions**

The federal government is responsible for setting standards for home heating under Canada's Energy Efficiency Regulations.

**O. Reg. 588/17 Asset Management Planning[26]** requires municipalities to commit to considering climate change – both greenhouse gas mitigation and adaptation - in asset management planning. The City's Comprehensive Asset Management (CAM) program guides the management of the City's $42 billion worth of assets including buildings, roads and pathways, fleet, water and wastewater infrastructure, and parks and

[25] The provincial Special Advisor on Flooding submitted a report on October 31 2019 with 66 recommendations : https://news.ontario.ca/mnr/en/2019/11/flood-resiliency-in-ontario.html
[26] Queen's Printer for Ontario. (2017). O. Reg. 588/17 Asset Management Planning https://www.ontario.ca/laws/regulation/170588

greenspace. Integrating climate change into CAM also better positions the City to respond to external funding.

**Waste Management**

In Canada, all three levels of government have a role to play in waste management, with the federal and provincial governments establishing waste reduction and diversion policies and programs, providing regulations and standards for, and the approval and monitoring of, waste management facilities and operations. Municipal governments are typically responsible for managing the collection, recycling, composting, and disposal of household waste in accordance with the policies and regulations established by the upper levels of government.

The City is the operator and manager of the public waste management system including waste and recycling collection, transfer and disposal at its Trail Road Landfill. The City also provides collection services for some specific parts of the Industrial, Commercial and Institutional (ICI) sector, although it is not required to do so by the Province. Within this segment, the City provides service to a majority of the city's multi-residential buildings, City-owned facilities, and small businesses through the City's Yellow Bag Program. ICI waste is regulated by the Province and is privately managed and operated.

Ontario's waste management system is regulated by a number of provincial laws and regulations, which have been changing in the last few years.

The City is in the process of embarking on a new Waste Management Master Plan to be completed in the coming years.

**Public Health**

The expectations for public health programs and services to be delivered by Boards of Health are identified in the Ontario Public Health Standards: Requirements for Programs, Services and Accountability (Standards). The Standards are published by the Minister of Health and Long-Term Care as per Section 7 of the *Health Protection and Promotion Act*. Boards of Health are accountable for implementing the Standards including the protocols and guidelines that are referenced within. One Standard relates

to healthy environments with the goal to reduce exposures to health hazards and promote the development of healthy built and natural environments that support health and mitigate existing and emerging risks, including the impacts of a changing climate. The Healthy Environments and Climate Change Guideline requires the Board of Health to engage municipalities in healthy environment strategies, climate change adaptation, and reducing environmental exposures.

**Greenhouse Gas Reporting**

Ontario Regulation (O. Reg.) 507/18 of the *Electricity Act: Energy Conservation and Demand Management Plans*[27] requires public agencies, including the City, to report out annually on their energy use and GHG emissions. Under this regulation, public agencies are required to develop a five-year energy conservation plan that is to be updated every five years.

O. Reg. 506/18 of the *Electricity Act: Reporting of Energy Consumption and Water Use*[28] as of 2019, requires owners of large buildings (buildings larger than 100,000 square feet) to report annually on energy and water consumption and performance data.

**Municipal Scan of Canadian Climate Change Plans**

Staff reviewed nine Canadian municipalities to assess how municipalities across the country are reducing greenhouse emissions, adapting and building resiliency to climate change. These municipalities were selected because they represent a mix of mid to large Canadian cities:

- Vancouver
- Edmonton
- Calgary
- Toronto
- Montreal
- Halifax

[27] Queen's Printer for Ontario. (2017). O. Reg. 397/11: Energy Conservation and Demand Management Plans https://www.ontario.ca/laws/regulation/r11397
[28] Queen's Printer for Ontario. (2017). O. Reg. 506/18: Reporting of Energy Consumption and Water Use https://www.ontario.ca/laws/regulation/180506

- Hamilton
- Guelph
- Kitchener/Waterloo Region

Seven of nine municipalities recently declared a climate emergency; Guelph has declared a climate crisis. Calgary has not made a similar declaration. All municipalities with climate declarations have been directed to take actions that support the declaration. Most have been directed to review and update climate change plans and targets.

Approaches to climate change planning varies between cities. Three municipalities (Calgary, Hamilton, and Halifax) have integrated climate change plans which include both mitigation and adaptation efforts. The other six have separate mitigation and adaptation or resilience plans. In general, the mitigation plans started earlier (in the early 2000s) and adaptation plans are newer or under development.

All plans:

- Embed climate mitigation, adaptation and resilience into core corporate planning processes. This includes overall land use and asset management plans, as well as sector-based plans such as green development, green fleet, stormwater management and flood risk, urban forestry and agriculture, and heat mitigation plans.
- Include working with partners across all sectors as an integral component.
- Acknowledge the need for additional support from other levels of government and the community in order to reach climate goals.

Several cities:

- Have already or are currently in the process of setting GHG emission reduction targets in line with the IPCC 1.5°C report
- Included an equity lens to examine how climate action impacts vulnerable populations and identifies ways to best support affected communities (considering both mitigation and adaptation).

A summary of findings from the municipal scan are presented in Document 1 – Municipal Scan of Canadian Climate Change Plans.

**Ottawa's Progress to Date**

Ottawa is taking concrete steps to mitigate and adapt to climate change.

**Mitigation Initiatives**

In the last five years, the City has invested in initiatives to mitigate climate change, notably:

- *Investments in Light Rail Transit (LRT) and Electric Buses*: The City and senior levels of government have invested billions of dollars into the creation of an LRT system in Ottawa. The first phase of LRT opened in September 2019, replacing a 12.5 km stretch of bus rapid transit and approximately 180 buses with 34 low-carbon electric powered trains. The second phase of LRT is scheduled to be completed in 2025 and will introduce 44 km of new rail to the LRT system. The benefits of an LRT system in Ottawa will be a significant reduction in corporate fleet emissions, improvements to air quality, and a quicker way to get around the city. In addition to LRT, the City is investing $6 million into electric buses and charging infrastructure, targeting having the first electric buses running as early as 2021.

- *Landfill Gas Improvements at City's Trail Road Waste Facility*: In 2018, the Trail Road Waste Facility constructed a Landfill Gas Perimeter Collection System and installed temporary collection wells in active waste cells in order to further capture additional landfill gas being generated as waste degrades. This has resulted in the most significant emission reductions within the corporation as can be seen in the 2018 corporate GHG inventory results. The Trail Road Waste Facility is continually trying to evolve operating gas conditions at the landfill to meet compliance obligations with the Ministry of Environment, Conservation, and Parks.

- *Energy Conservation and Demand Management*: Since 2015, the City has made great strides in the implementation of capital projects to reduce energy

consumption and the environmental impact of City facilities. Notable projects include converting 35,700 of 58,000 streetlights to LED; heating and ventilation improvements have been completed at the City's Water Purification Plants, 22% reduction in water use at 25 splash pads; and energy conservation initiatives created an estimated cumulative annual utility savings of approximately 5.9 million kWh of electricity, 297,909 $m^3$ of natural gas and 48,662 $m^3$ of water.

- *Complete Streets Implementation Framework:* The overall intent of the framework is to examine the needs of all road users, including those who choose to walk, bike, drive or take public transit as part of the initial street redesign process. The new Complete Streets Implementation Framework has been successfully applied on several city streets with positive outcomes including Main Street, O'Connor Street, and Churchill Avenue, and will continue to be referred to for future projects.

- *Municipal Green Fleet Plan*: Since 2009, the City's Municipal Green Fleet Plan sets forth initiatives that aim to reduce the City's carbon footprint within the municipal fleet to help reduce fuel use, improve air quality, and decrease GHG emissions. Notable projects have included purchase of hybrid and electric municipal fleet vehicles; installation of anti-idling devices in the entire fleet of City ambulances; the implementation of vehicle telematics; and researching and piloting the use of alternative fuels.

- *Surplus Hydro Ottawa Dividends*: In 2019, Council approved as recommended by the Standing Committee on Environment Protection, Water & Waste Management that any surplus in the Hydro Ottawa dividend received in the 2018-2022 Term of Council, that is the amount exceeds the projected amount in the Long Range Financial Plan, be directed toward energy efficiency, conservation of renewable energy programs within Ottawa, with specific projects to be recommended by staff and approved by the Standing Committee on Environmental Protection, Water & Waste Management and Council once the specific dollar amount, if any, is known.

- Adaptation and Resiliency Initiatives

The need to increase efforts to understand and build resilience to climate change has become more apparent and work has started on regional climate projections, a vulnerability assessment and a Climate Resiliency Strategy. In the last five years, the City has invested in initiatives to adapt to climate change, notably:

- *Public Health and Emergency Preparedness*: Ottawa Public Health, the City and many service providers continue to support vulnerable groups and reduce illness and deaths associated with extreme heat and cold, as well as helping people recover from other extreme climate events. Ongoing education and outreach raise awareness of climate change risks (including emerging health concerns such as West Nile Virus and Lyme Disease) and advise on actions they can take to protect themselves and be personally prepared.

- *Flood Risk Management*: The City is updating floodplain mapping and community flood risk profiles to better understand and reduce potential risks from both riverine and urban (basement or overland) flooding. This work enhances the City's ability to prepare for and respond to flooding. It guides future development and informs flood mitigation efforts such as improved planning and design of infrastructure.

- *Combined Sewage Storage Tunnel (CSST):* A signature project of the Ottawa River Action Plan, the CSST will reduce the frequency of combined sewage overflows to the Ottawa River, add redundancy to downtown sewer system, and reduce risk of basement flooding in Glebe and Centretown.

- *Urban Forest Management Plan*: Putting Down Roots for the Future is a 20-year strategic Urban Forest Management Plan (UFMP) for the City of Ottawa. This plan was approved by Ottawa City Council in June 2017 and has 26 recommendations for growing Ottawa's urban forest and making it healthier, more diverse and resilient. The UFMP and its recommendations have been developed based on input from City staff, other stakeholders and members of the public, assessments of the current status of the urban forest management and planning framework in Ottawa and accepted best practices. The UFMP is intended to provide the strategic and technical guidance required to achieve

urban forest sustainability in Ottawa over the coming decades. This is a crucial companion piece to other climate change efforts since it recognizes the carbon sequestration value and broader ecosystem services of Ottawa's urban forest.

- *Building Resilience of Residents*: The City provides a series of grants to residents to help them prepare for the impacts of a changing climate, including backwater valves and back-up power for sump pumps to reduce the risks of flooding. Agricultural grants are also available to support farmers to adapt to drought conditions and build economic resiliency to climate change.

For a more comprehensive list of corporate initiatives that have been undertaken in recent years to mitigate and adapt to climate change, refer to Document 2 – City of Ottawa Climate Change Initiatives.

**Ongoing Engagement with Other Municipalities**

Given the evolving and dynamic nature of climate change science and solutions, continuing to stay abreast of municipal best practices and trends will be an important part of keeping the City's efforts up to date, effective, and informed. To support these efforts, Ottawa actively participates in a range of global, national and local climate focused networks.

Internationally, Ottawa is a signatory of the Global Covenant of Mayors for Climate & Energy (GCoM). The Covenant is "the largest global alliance for city climate leadership, built upon the commitment of over 10,000 cities and local governments. These cities hail from 6 continents and 139 countries. In total, they represent more than 800 million people."[29] Ottawa is reporting its GCoM commitments through the Carbon Disclosure Project, which works with over 620 cities and "provides the global platform for cities to measure, manage and disclose their environmental data."[30] Ottawa is active in the European Union sponsored International Urban Cooperation initiative. A recent pairing with Malmö, Sweden energy systems as well as waste management have been strong areas on focus during recent exchanges.

[29] https://www.globalcovenantofmayors.org/about/
[30] https://www.cdp.net/en/cities

Nationally, Ottawa has been a member of the Federation of Canadian Municipalities Partners for Climate Protection Program since the 1990s. Ottawa is also a member of the Canadian Urban Sustainability Practitioners (CUSP), which supports information sharing, best practice research, and resource identification between 17 of Canada's large and leading municipalities. Recently, Ottawa was selected as one of 25 Canadian municipalities to join the first Showcase Cities cohort led by GCoM Canada. Over the next year, Ottawa will receive support to help reduce greenhouse gas (GHG) emissions and adapt to climate change to meet its requirements under GCoM.

Locally, Ottawa is a founding member and program catalyzer of EnviroCentre's Carbon 613 program, a growing network of organizations that are setting and achieving greenhouse gas reduction targets in Ottawa.

## RECOMMENDATIONS

The remainder of this report describes recommendations that would position the Climate Change Master Plan as the overarching framework for Ottawa to reduce greenhouse emissions and build resiliency to climate change. Ottawa's most recent GHG inventories, attached as Documents 3, informs the proposed short, medium and long-term GHG emission reduction targets for the City and the community to limit global warming to 1.5°C. The final recommendations ask Council to receive a project status update on the Energy Evolution, and to approve a spending plan for unallocated funds from prior years' Council authorizations.

### Recommendation #1: Receive the 2017 and 2018 Greenhouse Gas Inventories attached as Document 3 and summarized in this report

Ottawa currently has three Council-approved GHG reduction targets based on a 2012 baseline:

- A short-term target to reduce community emissions by 12% by 2024;
- A short-term target to reduce corporate emissions by 20% by 2024; and
- A long-term target to reduce community emissions by 80% by 2050

In 2019, Council directed to staff to undertake annual community and corporate GHG emissions inventories. Staff have since completed GHG inventories for the 2017 and 2018 calendar years.

The results from the 2018 GHG inventories indicate that the community and the City are currently exceeding the short-term GHG reduction targets. On the community side, emissions have declined by 14% since 2012 which is primarily attributable to the phase out of coal from Ontario's electrical grid. On the corporate side, emissions have dropped by 36% since 2012 which is largely attributable to the significant emission reductions at the Trail Road Waste Facility and reductions in other City facilities. For a detailed summary of the results of the 2017 and 2018 GHG inventories, refer to Document 3.

**Recommendations #2:**

This report recommends that Council approve:

a. **New 2025, 2030 and 2040 corporate targets to reduce GHG emissions 100% by 2040 below 2012 levels;**

b. **New 2025, 2030, 2040 and 2050 community targets to reduce GHG emissions 100% by 2050 below 2012 levels;**

**Current GHG Reduction Targets**

All three of Ottawa's current GHG emissions reduction targets were set prior to the Paris Agreement coming into force or the subsequent release of the IPCC's Special Report on Global Warming of 1.5°C. Analysis[31] shows that the long-term target to reduce community emissions by 80% by 2050 is roughly equivalent to limiting global average temperature increase to 2°C per the Paris Agreement.

[31] As part of Ottawa, declaration of a climate emergency, Council directed staff to complete an analysis of how the AQCCMP's long term target to reduce GHG emissions 80% below 2012 levels by 2050 compared to the IPCC's targets for limiting global warming to 1.5ºC. This analysis was done by Sustainable Solutions Groups (SSG) as part of Energy Evolution.

A new long-term commitment to reduce community emissions by 100% by 2050 would be required to align with the IPCC target to limit global average temperature increase to 1.5°C. New short and mid term targets would also be required.

**Proposed Community GHG Reduction Targets**

Figure 1 proposes new short and mid-term targets to meet the 80% by 2050 target and is based on the integrated modelling scenario work developed through Energy Evolution. Figure 2 proposes new short and mid-term targets to achieve the 100% reductions by 2050 target and is based on integrated modelling scenario work and the global carbon budget for the IPCC's 1.5°C global warming scenario (i.e. the total amount of emissions that are left to spend on the planet before global temperatures increase by 1.5°C).

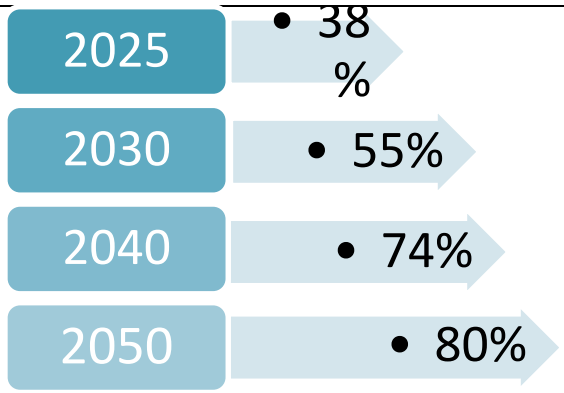


*Figure 1: Short, mid and long-term community targets to reach 80% by 2050 target*

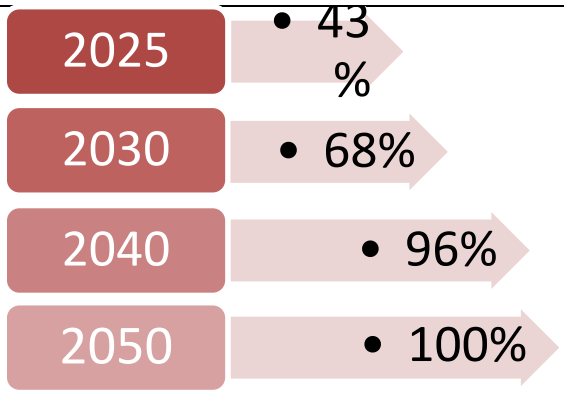


*Figure 2: Short, mid and long-term community targets to reach 100% by 2050 target*

The City does not directly control emissions beyond its own operations. However, in order to mobilize collective community action, staff recommend that Council continue to set ambitious community targets, monitor GHG emissions regularly, and communicate those results to residents. This would be consistent with the actions at the municipal level across much of the country and respond to the call for action by the IPCC.

Table compares the proposed targets with other jurisdictions in Canada. This table references officially published targets. Many municipalities have directed to staff to update or review plans to align with the IPCC 1.5°C recommendation. Vancouver, Edmonton, Toronto, Hamilton, and Halifax are currently updating their actions and targets to align with the 1.5°C global warming target set by the IPCC. Guelph is planning an upcoming report in reference to the 1.5°C target. Kitchener's council recognized the IPCC target and directed staff to improve targets where possible. Montreal's targets are not currently based on the 1.5°C scenario; however, Montreal has signed the Edmonton Declaration that calls for immediate action in recognition of the IPCC target.

Direct comparison between municipalities is challenging as baseline years vary. It is also worth noting regional groups of municipalities may have different targets than the individual municipalities that make up these regions.

*Table 1: GHG Reduction Targets in Other Jurisdictions*

| Jurisdiction | Community Targets | Corporate Targets |
|---|---|---|
| Canada | • 30% below 2005 by 2030[32] | |
| Ontario | • 30% below 2005 by 2030[33] | |
| Vancouver | • 33% below 2007 levels by 2020<br>• 80% by 2050, now stated as carbon neutral by 2050 in the latest budget | • 50% below 2007 levels by 2020 |

[32] This is Canada's Commitment to the Paris Agreement aligning with 2°C scenario
[33] This aligns Ontario with Canada's 2030 target under the Paris Agreement

| | | |
|---|---|---|
| Calgary | • 20% below 2005 levels by 2020<br>• 50% by 2036<br>• 80% by 2050 | • 20% below 2005 levels by 2020<br>• 80% by 2050 |
| Edmonton | • 35% below 2005 levels by 2035<br>• Reduce per capita energy consumption 25% by 2035 | • 50% below 2005 levels by 2030 |
| Montreal | • 30% below 1990 levels by 2030<br>• carbon neutral by 2050 | • 30% below 2002 levels by 2020<br>• 80% by 2015 |
| Toronto | • 30% below 1990 levels by 2020<br>• 65% by 2030<br>• 80% by 2050 | • All new City-owned buildings near-zero GHG emissions by 2026<br>• All existing City-owned buildings 40% more energy efficient by 2040<br>• 24 MW of renewable energy on City-owned facilities and lands by 2020<br>• 45% of City-owned vehicles low carbon by 2030<br>• 100% of City-owned facilities zero waste status by 2030<br>• 1.5 million GJ of energy generated from biogas by 2030 |

| | | |
|---|---|---|
| Kitchener/ Waterloo Region | • 6% below 2010 by 2020,<br>• 80% by 2050 | • 8% below 2016 by 2026 (equivalent. to 30% below 2010) |
| Guelph | • Net zero carbon by 2050 | |
| Hamilton | • 50% below 2005 by 2030<br>• 80% by 2050 | |
| Halifax | • Plan goes to Council March 2020. | • 30% below 2008 by 2020 |

**Proposed Corporate GHG Reduction Targets**

While corporate emissions from City operations were a small percentage of overall GHG emissions in Ottawa in 2018 (5%), leading by example is critical to set the pace, spur innovation, and catalyze community action. As part of the long-term plan, the Climate Change Master Plan recommends that City Council demonstrate leadership by setting more aggressive corporate targets. In order to help limit global warming to 1.5°C, the corporation could strive to reduce corporate emissions 100% by 2040, 10 years earlier than the community. Figure 3 identifies the short and mid term targets that the City would need to meet in order to stay on track to meet the proposed 100% by 2040 target. Under this scenario, the City has already achieved the current short-term 2024 target and can focus on meeting the 2030 target. It should be noted that starting in 2021, it is expected that the City will observe an increase in Trail Road Waste Facility emissions as a result of Provincial regulatory requirements. Per the Trail Waste Facility Class Environmental Assessment, the City is required by the Province to recirculate leachate in order to reduce the contaminating lifespan of the landfill in the future, which will accelerate GHG emissions. These considerations must be taken into account when tracking progress towards meeting the corporate targets. As part of the Solid Waste Master Plan, staff will be looking at what is operationally feasible to reduce GHG emissions.

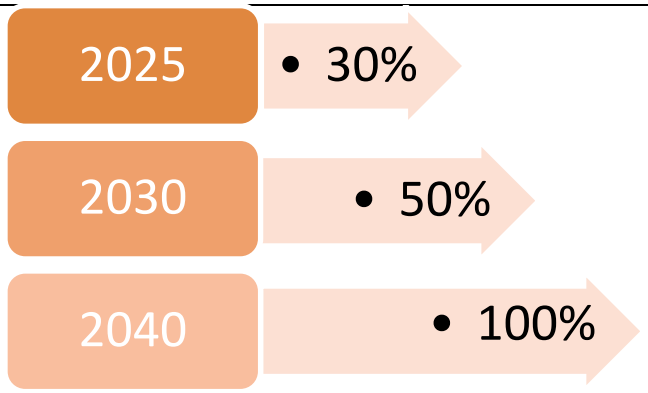


*Figure 3: Short, mid and long-term corporate targets to reach 100% by 2040 target*

**Recommendation #3: Approve the Climate Change Master Plan attached as Document 4 and summarized in this report**

**Ottawa's Climate Change Framework**

As part of the 2014 Air Quality and Climate Change Management Plan (AQCCMP), a review and update of the plan was required after five years. The timing of this update is well positioned since the science, the legislative context, and the opportunities have evolved significantly since 2014. Staff renamed the AQCCMP the Climate Change Master Plan to position it as a long-term plan that informs, influences and supports other municipal plans[34]. As a Master Plan, it is elevated in City policy to a level that is comparable to a number of existing master plans.

The Climate Change Master Plan would be the framework for how Ottawa will mitigate and adapt to climate change over the next three decades. Mitigation means reducing or preventing greenhouse gas (GHG) emissions that lead to global warming. Adaptation means responding to the impacts of climate change today and becoming more resilient for the future.

[34] Regional air quality monitoring is carried out by federal and provincial authorities. The City will continue to use regional air quality information to inform land use planning.

In keeping with the latest IPCC reports, the proposed vision of the Climate Change Master Plan is to take unprecedented, collective action that transitions Ottawa to a clean, renewable and resilient city by 2050. It is guided by the principles that:

1. Everyone has a responsibility to manage energy consumption and to mitigate risks.
2. Collaboration is needed amongst various levels of government, utilities, stakeholders, and the broader community to effect change and develop joint solutions.
3. Municipal leadership is needed to ensure an integrated and comprehensive approach across the corporation and the community.
4. Coordination is needed amongst all long-term municipal plans, including land use, transportation, and infrastructure master plans, the Comprehensive Asset Management program, and the long-range financial plan to ensure a strategic, harmonized approach.
5. Equity and inclusion considerations must be incorporated into all decision-making processes.

The Climate Change Master Plan provides the framework for actions that address both mitigation and adaptation (Figure 4).

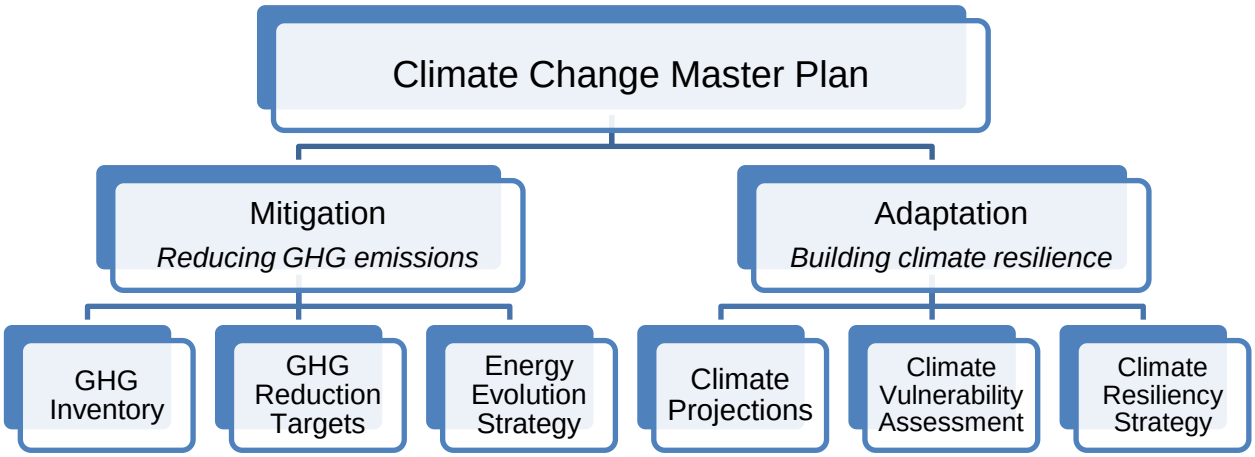


*Figure 4: Ottawa's Climate Change Framework*

Over the last five years, more emphasis has been placed on initiatives that mitigate the climate crisis, including:

- Setting GHG reduction targets
- Completing annual GHG emission inventories
- Developing Energy Evolution: Ottawa's Community Energy Transition Strategy

The Climate Change Master Plan is not intended to be a standalone document. Coordination is needed amongst all long-term municipal plans so that the Climate Change Master Plan informs and influences numerous other City initiatives including, but not limited to:

- *Official Plan and associated Master Plans*: The Official Plan provides a vision for the future growth of the city and a policy framework to guide the city's physical development, with an aim for Ottawa to grow to be the most liveable mid-sized city in North America. It is coordinated with the reviews and updates of the

Transportation Master Plan, the Infrastructure Master Plan, the Parks and Greenspace Master Plan, and the Development Charges By-law.

- *Comprehensive Asset Management (CAM)*: Asset Management is an integrated business approach involving the different disciplines of planning, finance, engineering, maintenance, and operations to effectively manage existing and new infrastructure through their lifecycle. The City maintains nearly $42 billion in existing infrastructure and works to ensure safe and sustainable services are delivered to our communities in a cost-effective way.

- *Long Range Financial Plan (LRFP):* The Long-Range Financial Plan provides a multiple-year outlook of the City's capital requirements, focusing on the funding strategies that are required to provide for the renewal and maintenance of the City's assets in a state of good repair.

- *Urban Forest Management Plan (UFMP):* Ottawa's urban forest includes all trees and their habitat public and private property within the city's urban area boundary. The UFMP is intended to provide the strategic and technical guidance required to achieve urban forest sustainability in Ottawa over the coming decades.

- *Solid Waste Master Plan*: The municipal Solid Waste Master Plan is intended to provide the overall framework, direction, and goals for solid waste management, diversion and reduction policy over the short-, medium- and longer-term horizon.

- *Operational Plans and Polices:* These include the Energy Conservation and Demand Management Plan, the Municipal Green Fleet Plan, the Green Building Policy, the Corporate Electric Vehicle Charging Station Policy, and the Municipal Emergency Plan among others.

**Priorities for the next five years (2020-2025)**

As identified by the IPCC, significant action and investment is required in the next 10 years to achieve the GHG emission targets and to build resilience in Ottawa. The proposed Climate Change Master Plan identifies eight priority actions for the next five years (2020-2025) that can be embedded into City business. They are:

1. Implement Energy Evolution: Ottawa's Community Energy Transition Strategy.
2. Undertake a climate vulnerability assessment and develop a Climate Resiliency Strategy.
3. Apply a climate lens to the new Official Plan and supporting documents.
4. Apply a climate lens to asset management and capital projects.
5. Explore the feasibility of setting corporate carbon budgets, including piloting them in a small portion of the organization.
6. Explore carbon sequestration methods and the role of green infrastructure.
7. Encourage private action through education, direct and indirect incentives, municipal support, and advocacy for support of individuals and private organizations by senior levels of government.
8. Develop a governance framework to build corporate and community capacity, align priorities, and share accountability in tackling climate change.

The first three priorities are already underway. They have started either because of Council direction or government legislation. The last five priorities have been identified as critical areas to be explored and developed in the short-term in order to achieve the long-term vision. A summary of each action, its current status and the policy and legislative drivers follows. An overview of the action, key outcomes, corporate and community partners, timelines, and resource requirements are provided in Document 4. Existing and new budget requirements have been identified; securing this funding will be critical to their success.

**#1 Implement Energy Evolution: Ottawa's Community Energy Transition Strategy**

Energy Evolution is the primary framework and action plan for how Ottawa will mitigate GHG emissions and meet our GHG emission reduction targets. It is a multi-phased, community-wide initiative with a vision to transform Ottawa into a thriving city powered by clean, renewable energy through energy use through conservation and efficiency and local or regional renewable energy. It includes a Business as Planned scenario that

demonstrates the impact on our emissions if we do not alter our policies and actions, an integrated model that demonstrates how a suite of 44 policies and actions could achieve GHG emission reduction targets of 80 per cent by 2050 or 100 per cent by 2050, and a list of proposed projects. Energy Evolution also includes an assessment of co-benefits associated with actions to reduce GHG emissions.

Status: A status update of Energy Evolution, including Phase 1 projects, pathways[35] completed in Phase 2, the draft model, and proposed list of 20 projects is included in Document 5 – Energy Evolution Project Update. The final report will be brought forward in Q2 2020 and includes the final energy and emissions model, detailed financial analysis of the model, detailed descriptions of the proposed projects listed in this report and a proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus.

Drivers: Climate Emergency Declaration, Global Covenant of Mayor's for Climate and Energy

**#2 Undertake a climate vulnerability assessment and develop a Climate Resiliency Strategy**

The aim of a long-term Climate Resiliency Strategy is to mitigate climate risks and impacts, and to build the capacity of social, economic, and environmental systems to adapt and thrive under evolving climate conditions. It has three key steps: future climate projections, vulnerability assessment, and strategy development. The strategy will be developed in close coordination with internal and external stakeholders to align and integrate with programs such as hazard mitigation and health vulnerability plan. A supporting action plan will identify priority actions and funding requirements including ways to integrate climate resiliency in existing City procedures.

Status: The City is currently working with the National Capital Commission and with technical advice from Environment and Climate Change Canada and climate scientists to develop more detailed climate projections for the National Capital Region. This work will provide an analysis of future climate conditions to year 2100 for temperature,

[35] Pathway studies are focused technical notes describing how a specific energy technology may develop overtime in Ottawa and were used to inform the baseline and the emission scenarios in the model.

precipitation (rain and snow), wind, and extreme weather events (as feasible). Climate projections will inform an overall vulnerability assessment and resilience plan and be used to inform other City projects and plans.

*Drivers: Climate Emergency Declaration, Global Covenant of Mayor's for Climate and Energy, Ontario Public Health Standards under the Health Protection and Health Promotion Act, Ontario Emergency Management and Civil Protection Act*

**#3 Apply a climate lens to the new Official Plan and supporting documents**

The Official Plan provides a vision for the future growth of the city and a policy framework to guide the city's physical development. Development of a new Official Plan will be coordinated with the reviews of the Transportation Master Plan, the Infrastructure Master Plan, the Parks and Greenspace Master Plan, and the Development Charges By-law. Building on the key findings of *Ottawa Next: Beyond 2036*, embedding climate and energy resiliency is one of the five Big Moves identified for the new Plan. Official Plan policies must work towards a transition from fossil fuels to renewable energy sources and reducing emissions in the city's building, transportation, and waste sectors. The Plan must also strengthen policy directions that mitigate extreme heat, protect people and property from flooding, and build resilience in our communities, infrastructure and natural environment.

Status: Discussion papers on Energy and Climate Adaptation and Resiliency were prepared in early 2019 to launch public consultation on key issues for the new Official Plan. Council approved climate and energy resiliency as one of the Big Five Moves for the Official Plan in August 2019. Council subsequently approved the Preliminary Policy Directions for the Official Plan on December 12, including policy directions on climate and energy, and climate resilience. Staff will now develop policies.

Drivers: Provincial Policy Statement (existing and proposed)

**#4 Apply a climate lens to asset management and capital projects**

The Comprehensive Asset Management (CAM) program guides the management of the City's $42 billion worth of assets. Recent provincial regulations require municipalities to commit to considering climate change – both greenhouse gas mitigation and adaptation

- in asset management planning. Risk management and asset resiliency are core principles of asset management. Further integrating climate considerations into CAM will enable climate change to be considered alongside additional challenges such as aging infrastructure, growth and limited resources. Parallel Climate Change Master Plan projects in Energy Evolution and Climate Resiliency will provide key inputs in terms of actions to meet our greenhouse gas targets and key vulnerabilities to projected climate conditions.

Status: The City is currently updating its Comprehensive Asset Management Policy and starting to develop Asset Management Plans.

Driver: O. Reg 588/17 Asset Management Planning for Municipal Infrastructure, eligibility requirements for infrastructure and other funding (e.g. federal Climate Lens)

**#5 Explore the feasibility of setting corporate carbon budgets including piloting them in a small portion of the organization**

A carbon budget sets the total amount of carbon dioxide that can be emitted into the atmosphere to prevent dangerous levels of global warming. Cities such as Vancouver, Edmonton and Oslo are adopting or exploring the implementation of a carbon budget to support projects that reduce GHG emissions. Developing a carbon budget for Ottawa would involve establishing a local emissions budget and making decisions about how we "spend" our corporate GHG budget within that context.

Status: Not yet started. Corporately, a pilot project will start with Planning, Infrastructure and Economic Development Department and Ottawa Public Health.

Drivers: IPCC 1.5$^{O}$C Report[36]

**#6 Explore carbon sequestration methods and the role of green infrastructure**

Carbon sequestration is the process through which forestry, agricultural, and wetland practices capture carbon dioxide and stores it away over the long-term. It does not

[36] IPCC Press Release. Summary for Policymakers of IPCC Special Report on Global Warming of 1.5ºC approved by governments. October 8, 2018.
https://www.ipcc.ch/site/assets/uploads/2018/11/pr_181008_P48_spm_en.pdf

replace the need for action to mitigate climate change and transition off fossil fuels; rather, it complements it. Understanding the potential for carbon sequestration in Ottawa will entail: completing a natural features carbon inventory that includes inventorying carbon in forests, wetlands, and agricultural soils; mapping these resources; and exploring carbon market options.

Status: Not yet started.

Drivers: Urban Forest Management Plan and Significant Woodlands Policy.

**#7 Encourage private action through education, direct and indirect incentives, municipal support, and advocacy for support of individuals and private organizations by senior levels of government**

Approximately 95% of community wide emissions are under the direct control of other community players including the federal and provincial governments, utilities, large energy consumers and employers, small businesses, non-profit organizations, and residents. Private action will range from individual choices (e.g. shifting from personal vehicles to transit or active transportation) to investment (e.g. high-performance new buildings, retrofits, electric vehicles and renewable energy generation). Similar private action is required to build resilience to future climate conditions (e.g. retrofitting homes or buildings to protect against flooding, winds or heat, ensuring adequate insurance).

Support from senior levels of government and the private sector will be required to approach the level of effort and investment required. The City of Ottawa can play a leadership and coordinating role in: climate education, leveraging other resources, recommending, advocating for and promoting incentives to catalyze action, assessing municipal tools to support action, and setting policies and procedures.

Status: Ongoing. Focus areas will be identified through each of the other priority areas. An Outreach and Communications Coordinator will be hired in early 2020 to support some aspects of this work.

Drivers: Approximately 95% of community wide emissions are under the direct control of other community players including the federal and provincial governments, utilities, large energy consumers and employers, small businesses, non-profit organizations, and

residents. Support from senior levels of government and the private sector will be required to reach the level of effort and investment required.

**#8 Develop a governance framework to build corporate and community capacity, align priorities, and share accountability in tackling climate change.**

Transitioning to a clean, renewable and resilient city will require broad and deep participation in mitigation and adaptation efforts. Major stakeholders in the National Capital Region including the Federal Government, the National Capital Commission, City of Gatineau, Hydro Ottawa, and institutions such as universities also have strategies underway to address climate change. This project would explore ways in which large or leading organizations can come together to coordinate efforts, align priorities, and mobilize the broader community.

Status: In Ottawa, various forms of governance structures have been established locally to deal with specific focus areas. A multi-disciplinary Sounding Board and technical working groups have contributed valuable expertise in the development of Energy Evolution. Low Carbon Cities Canada, or LC3, has established an Advisory Board to guide how a $20M endowment from the Federation of Canadian Municipalities will be used to advance low carbon solutions in Ottawa. "Collective Impact" has a multi-sectoral Leadership Team that is intended to guide scaling up residential retrofits. The Board of Trade has issue committees to advise policy and engage membership around specific topics. Membership-based networks such as the Canada Green Building Council, Building Operators and Managers Association, and Carbon 613 provide training and networking amongst members. The Ottawa Renewable Energy Co-operative uses community investment to finance sustainable energy projects.

Drivers: There is currently no forum in which large or leading organizations can come together to coordinate efforts, align priorities, and mobilize mitigation and adaptation efforts.

**Recommendation #4 and #5:**

**Receive a project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report;**

**Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in Q2 2020 that includes:**

a. **Finalized energy and emissions model;**

b. **A financial and affordability analysis of the model to identify the investment required, the net present value, the return on investment, marginal abatement costs, and employment impacts;**

c. **Detailed descriptions of the proposed Energy Evolution projects listed in this report including roles and responsibilities, timelines, municipal authorities and any barriers to implementation, equity and inclusion considerations, and resourcing needs;**

d. **A proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus once the value of the dividend surplus is known;**

Energy Evolution is the primary framework and action plan for how Ottawa will mitigate GHG emissions and meet our GHG emission reduction targets. It is a multi-phased, community-wide initiative with a vision to transform Ottawa into a thriving city powered by clean, renewable energy through energy use through conservation and efficiency and local or regional renewable energy. It includes a Business as Planned scenario that demonstrates the impact on our emissions if we do not alter our policies and actions, an integrated model that demonstrates how a suite of 44 policies and actions could achieve GHG emission reduction targets of 80 per cent by 2050 or 100 per cent by 2050, and a list of proposed projects. The actions are organized in five key sectors: Land Use and Growth Management, Buildings (New and Existing), Transportation, Waste and Renewable Natural Gas, and Electricity. Energy Evolution also includes an assessment of co-benefits associated with actions to reduce GHG emissions.

A status update of Energy Evolution, including Phase 1 projects, Phase 2 Pathway Studies[37], the draft model, and proposed list of 20 projects is included in Document 5 – Energy Evolution Status Update. Refer to Document 6 for an update on Phase 1 projects, Document 7 for details on the Phase 2 Pathways Studies, Document 8 for the Catalyst Project Program Summary Report, and Document 9 for an update on 2017 Community Energy Innovation Fund projects.

**Model**

At the core of Energy Evolution is a comprehensive, custom-built energy, emissions and finance model. The model incorporates growth, land use, buildings and transportation data with energy conservation, efficiency and renewable energy pathway studies and presents three different GHG emission scenarios:

- A Business as Planned scenario (BAP scenario).
- An 80% GHG emissions reduction scenario (80% scenario).
- A 100% GHG emissions reduction scenario (100% scenario).

The model describes what outcomes are required to meet these scenarios in five key sectors: Land Use and Growth Management, Buildings (New and Existing), Transportation, Waste and Renewable Natural Gas, and Electricity. Refer to Document 10 – Modelling Ottawa's Greenhouse Gas Emissions to 2050 for draft results.

As with any model, there are limitations and assumptions. Some GHG emissions are not accounted for in the model because limited data was available, or emissions were outside of the scope of international protocol. Sectors not included in the model are: aviation, inter-city rail, small equipment, or agriculture. The model also does not factor in: time of use of electricity, natural gas pipe leakage, embodied carbon in materials of buildings or equipment, or carbon sequestration activities. Details on the scope of the protocol and information used to populate the CityInSight model can be found in Document 11 – Data, Methodologies, and Assumptions Manual. The model may have

[37] Pathway Studies are focused technical notes describing how a specific energy technology may develop overtime in Ottawa and were used to inform the baseline and the emission scenarios in the model.

further limitations in that some of the actions contemplated may have social and political barriers to implementation because they are controversial, in addition to financial, technological and time constraints. However, it remains useful as a way to prioritize the City's actions so that they will have the greatest effect on reducing GHG emissions.

**Proposed Projects**

Energy Evolution proposes 20 projects to be undertaken within the next five years to initiate and further refine action in these five sectors. These projects were identified because of the GHG reduction potential or enabling outcomes associated with them according to the model. All projects require more fully detailed project charters with most, if not all, starting to be developed in 2020. Each project will also require detailed financial analysis with lead departments to refine resources, costs (operating and capital), savings, revenue and financing options. All projects must be started in the next five years to achieve the GHG emissions reduction targets.

Land Use and Growth Management

- Integrate energy and climate mitigation priorities in the new Official Plan and supporting master plans.

Buildings

- Community Building Heating Strategy to address infrastructure and utility requirements for new ways of heating buildings.
- Residential Retrofit Accelerator Program to accelerate community residential retrofits through marketing, information and financial mechanisms.
- Commercial Retrofit Accelerator Program to accelerate community commercial, industrial, and institutional retrofits through marketing, information and financial mechanisms.
- High Performance Development Standard to improve building design and construction across the community and support an industry-wide transition of new buildings to net zero emissions.

- Municipal Buildings Renovation and Retrofit Program to achieve higher building energy performance improvements in City owned buildings.
- Update Municipal Green Building Policy to align with corporate GHG reduction targets.

Transportation

- Personal Vehicles Electrification Strategy to enable and encourage personal electric vehicle (EV) adoption.
- Commercial Vehicles Electrification Strategy to enable and encourage commercial electric vehicle (EV) adoption.
- 100% zero emission Transit fleet.
- Concept transit network is implemented.
- Transportation Mode Share Framework to reduce the reliance on personal vehicles in favour of sustainable modes including public transit, walking, cycling and carpooling.
- Update Municipal Green Fleet Plan considering corporate GHG reduction targets.

Waste and Renewable Natural Gas

- Divert Organics from Landfill to reduce emissions associated with managing waste and enable energy from waste.
- Renewable Natural Gas Strategy to supply GHG neutral gas to the community.

Electricity

- Electricity Resource Strategy to develop local or regional renewable electricity supplies.

Private Action

- Climate Change Education and Outreach program to engage the public in collective private action to meet long term GHG reduction targets.
- Climate Ambassadors Network to engage commercial and institutional champions to meet long term GHG reduction targets.
- Advocacy Strategy to engage with senior levels of government to secure funding, policy changes and/or legislative authority to meet long term GHG reduction targets.
- Fund the Evolution to review municipal financial mechanisms to support the transition.

Of these 20 projects, it is anticipated that approximately half can be advanced using primarily City resources while the other half will require a combination of City and community partner resources. The final report for Energy Evolution will be brought forward in Q2 2020 and include the final energy and emissions model, detailed financial analysis of the model, detailed descriptions of the proposed projects listed in this report and a proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus.

**Recommendation #6:** Delegate authority to the Council Sponsors Group on Climate Change to provide the Mayor with a list of priority areas and activities, which are consistent with the Council-approved Climate Change Master Plan, to allow the Mayor to advocate with the provincial and federal governments on program funding, co-delivery opportunities and related policy and regulatory supports necessary to implement the Climate Change Master Plan priority projects, as appropriate.

Significant investment, policy alignment and regulatory changes are needed amongst various levels of government, utilities, stakeholders, and the broader community to meet Ottawa's GHG reduction targets. As directed by the Climate Emergency motion (ACS2019-CCS-ENV-0005), staff will work with senior levels of government to accelerate ambition and action to meet the urgency of climate change and provide additional resources for municipalities and the public to reduce their GHG emissions and build resiliency to climate impacts.

This recognizes that it is inherently difficult to achieve investment in many priority areas on the basis of the property tax system. Property taxes have far less flexibility as compared to the broader suite of taxation available to senior levels of government. In addition, there are restrictions on spending and caps on municipal debt levels that do not apply to senior governments. Furthermore, actions by senior governments on a provincial and national scale may achieve economies and efficiencies that are not possible through actions solely at a single municipality.

To support this work, an Advocacy Strategy is proposed to coordinate communications with senior levels of government, utilities, stakeholders, and the broader community when:

- Financial investments are required to meet Ottawa's GHG reduction targets.
- Policy alignment, regulatory changes or legislative authority are required to resolve issues or implement solutions.
- Stakeholders identify barriers or opportunities and the City is able to advocate for residents, businesses, and institutions.
- Other levels of government or related organizations (such as the Independent Electrical Systems Operator or Energy Board) are seeking input on proposed policy or regulatory changes.

Staff will also continue to collaborate with other large and leading municipalities through organizations like the Federation of Canadian Municipalities Big City Mayors Caucus, the Association of Municipalities of Ontario, Canadian Urban Sustainability Practitioners, and the Clean Air Partnership.

Potential advocacy topics include but are not limited to:

- Funding to support the expansion of transit and active transportation infrastructure.
- Funding to support the zero-emission transit and fleets.

- Funding and/or incentive programs to support residential, commercial, institutional and industrial retrofits.
- Funding and/or incentive programs to support the adoption of personal and commercial electric vehicles.
- Funding and/or incentives to support those affected by extreme weather events and build community resiliency to climate change.
- Accelerated timelines for updates to the National Building Code, moving to net zero buildings by 2025 instead of 2030.

The process, details, and timing will be determined on a case by case basis for each of the priority areas with input from relevant departments, the Climate Change Council Sponsors Group and the Mayor's office.

**Recommendation #7: Approve the spending plan in Document 13 and summarized in this report for $210,000 of unspent 2017 and 2018 Hydro Ottawa Dividend Surplus funds**

In 2018, Council approved a one-time budget of $633,000 to fund Energy Evolution projects through the 2017 Hydro Ottawa Dividend Surplus. A total of eight projects received funding and are expected to be completed by the end of 2020. For a status update on Hydro Ottawa Dividend Surplus projects, refer to Document 12 – 2017 Hydro Ottawa Dividends Project Status Update. Based on current projects estimates, staff anticipate there will be approximately $20,000 of unspent funding and require approval by Committee and Council to reallocate the $20,000 to other energy efficiency, conservation or renewable energy programs within Ottawa.

In March (Motion No 9/3) and June 2019 (Motion 16/2), Council approved $500,000 of the 2018 Hydro Ottawa Dividend Surplus to be directed toward energy efficiency, conservation or renewable energy programs within Ottawa. In the Climate Emergency motion (ACS2019-CCS-ENV-0005), staff were directed to report back, within the 2019 calendar year, on a spending plan. Of the $500,00 approved, $60,000 was allocated to undertaking annual GHG emission inventory reporting and $250,000 was allocated to the Climate Emergency to finance a combination of consulting support and an additional

temporary FTE to assist with the increased scope of work. A spending plan for the remaining $190,000 requires approval by Committee and Council.

Document 13 proposes a spending plan for the remaining $20,000 from the 2017 Hydro Ottawa Dividend Surplus and the $190,000 outstanding 2018 Hydro Ottawa Dividend Surplus. The Plan proposes funding to extend one existing temporary full-time position to work on the implementation of Energy Evolution projects as well as door sealing and ground source heat pump projects to increase energy efficiency and conservation within municipal facilities. The temporary full-time position will support the creation of High Performance Development Standards, an update of the Corporate Green Building Policy, on-going work with electric vehicle infrastructure and the submission of funding applications.

**Next Steps and Reporting**

Over the next five years, the City will work with the Climate Change Council Sponsors Group, departments and community partners to move forward with the projects outlined in the Climate Change Master Plan. Staff will bring reports to relevant Committees on the five-year priority projects, as required.

The Energy Evolution final report will be brought forward in Q2 2020 and include the final energy and emissions model, detailed financial analysis of the model, detailed descriptions of the proposed projects listed in this report and a proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus.

The City has started a climate projection project with the National Capital Commission to forecast future climate conditions in the National Capital Region until year 2100. Changes in temperature, precipitation and extreme events will be used to determine potential impacts, assess risks and vulnerabilities, and develop a Climate Resiliency Strategy.

In addition to individual project reports, staff will provide an annual status update on the Climate Change Master Plan that includes:

- Annual GHG community and corporate inventories

- An assessment of how Ottawa is tracking towards community and corporate targets
- An update on the Climate Change Master Plan priorities
- Recommendations, as required, to advance the Climate Change Master Plan priorities
- Budget and staffing pressures, if required

Separate from annual reporting and budget permitting, staff will update the Energy Evolution model as new information becomes available or when it would clarify the GHG implications of significant City plans, policies, or programs such as the:

- New Official Plan
- Transportation Master Plan
- Infrastructure Master Plan
- Solid Waste Master Plan

A full review and update of the Climate Change Master Plan, including the guiding principles, goals, GHG emission reduction targets, and priority actions will be completed in five years (2025). Simultaneously, Energy Evolution and the Climate Resiliency Strategy will be reviewed to see if the three documents can be merged into one standalone document.

Municipal levers, limitations and jurisdictional considerations will be important context in the implementation of the Climate Change Master Plan. Staff will continue to monitor relevant policy and work within jurisdictional considerations to the development of mitigation and adaption solutions.

The website (https://ottawa.ca/en/residents/water-and-environment/climate-change-and-energy) will be kept updated to link relevant documents, including those related to priorities, as they are approved. Where possible, data (including the results of the GHG inventories) will be made available through the City's Open Data Catalogue to ensure

transparency of information and to assist the public in undertaking their own GHG reduction measures.

## RURAL IMPLICATIONS

As part of the equity and inclusion considerations of Energy Evolution, further work is needed to assess the differential implications of various projects on Ottawa's rural area. On one hand, rural residents inherently have more requirements to travel for work, amenities and services, and it is likely that options for alternative energy for transportation will lag in rural areas. On the other hand, rural residents may have more options for alternative low carbon energy systems in their home energy use.

Revenue generation and employment opportunities associated with biogas, biomass and large-scale solar energy generation facilities are anticipated for Ottawa's rural area.

## CONSULTATION

The Climate Change Master Plan was developed with input from city staff. In the last three years, staff have focused on key stakeholder and public input to develop three priority actions: Energy Evolution, the Climate Resiliency Strategy and the new Official Plan. Input received through these projects has informed the Climate Change Master Plan and the eight priority actions.

An Interdepartmental Working Group was established with representatives from eight departments and Ottawa Public Health to provide input on the development of the Climate Change Master Plan and its eight priority actions. In addition to three working group meetings in 2019, staff met with departments upon request, including presentations to Ottawa Public Health and Public Works and Environmental Services Departmental Leadership Teams. On August 13, 2019, staff convened the inaugural meeting of the Climate Change Council Sponsors Group which was established through Council's declaration of a climate emergency. Staff met with the Climate Change Council Sponsors Group four times – once on the Climate Change Master Plan and three times on Energy Evolution. Staff also provided two updates to the Environmental Stewardship Advisory Committee.

To facilitate collaboration between the municipality and community partners on Energy Evolution, staff worked with interested Councillors, a Sounding Board, and both general and technical working groups consisting of staff and technical experts. Between 2016 and 2019, the project has engaged has hosted over 30 meetings with more than 180 key stakeholders representing approximately 90 organizations in Ottawa. Inputs from these stakeholders, as well as consultants engaged to provide background information and technical analysis, has been critical in guiding and informing Phase I and 2.

Consultation to date on the Climate Resiliency Strategy has included an initial discussion with senior managers across departments in late 2018 on the need for an integrated vulnerability assessment and resiliency strategy based on localized climate science data. A departmental working group was subsequently formed to guide the development of a Climate Resiliency Strategy and support risk assessments and resiliency planning across the City. Staff from this group participated in a joint workshop in July 2019 with staff from Ottawa Public Health, the National Capital Commission and Conservation Authorities on the climate projections study. This workshop identified the most relevant climate indices to support vulnerability and risk assessments. Further consultation will take place in 2020 to discuss the projections and its application.

Staff have participated in five public consultations related to how Climate Change is being embedded in the new Official Plan.

## COMMENTS BY THE WARD COUNCILLORS

This is a city-wide report – not applicable.

## ADVISORY COMMITTEES COMMENTS

On June 27, 2019, staff provided an overview of the review and update of the AQCCMP and Energy Evolution to the Environmental Stewardship Advisory Committee. Comments from members of the Advisory Committee included:

- Request for a future staff presentation on the effects of invasive species moving further north due to climate change.

- Environmental assessments to involve a climate lens and carbon budget, taking also into account health, social, and economic impacts.

The Environmental Stewardship Advisory Committee also carried the following motion regarding the Council's declaration of a climate emergency:

> WHEREAS the City of Ottawa has declared a climate emergency, and;
>
> WHEREAS almost all greenhouse gas (GHG) emissions are due to individual acts;
>
> THEREFORE, BE IT RESOLVED THAT staff be requested to provide additional details on the immediate actions that the City of Ottawa will be taking to raise the awareness of actions by Ottawa residents on this emergency.

On October 24, 2019, staff provided a more detailed overview Energy Evolution to the Environmental Stewardship Advisory Committee.

## LEGAL IMPLICATIONS

There are no legal impediments to Committee and Council's receipt and approval of the recommendations of this report.

## RISK MANAGEMENT IMPLICATIONS

There are risk implications. The short-term success of the eight priority actions of the Climate Change Master Plan and the actions to achieve the GHG reduction targets identified in Energy Evolution are dependent on new funding, financing, and staff resources, starting with the 2021 budget. Longer term, success will be dependent on significant policy and program alignment as well as investment from senior levels of government, the City, and the private sector. The labour market risk affects whether skilled workers are available to perform the work required. Other risks are global in nature. Technology risk is whether the solutions required for carbon reductions are commercially available and effective by the time necessary. Interest rate fluctuation will affect the total cost and all parties' ability to leverage. Weather and climate risk affect the heating and cooling requirements, the availability of sun, wind, and rain for renewable energy generation, and the occurrence of severe weather events.

## ASSET MANAGEMENT IMPLICATIONS

The recommendations documented in this report are consistent, in part, with the City's current Comprehensive Asset Management (CAM) Program objective by providing a vision for forward looking decision making, focused on risk management and asset resiliency. To ensure climate mitigation and adaptation, asset management is a key consideration to GHG emission reductions, through the application of a climate lens to future life cycle capital projects. The Q2 2020 Energy Evolution Final report is expected to provide financial analysis of actions in the model which could be used to inform the CAM Program.

## FINANCIAL IMPLICATIONS

Document 13 proposes a spending plan for the remaining $20,000 from the 2017 Hydro Ottawa Dividend Surplus and the $190,000 outstanding 2018 Hydro Ottawa Dividend Surplus. The Plan proposes funding to extend one existing temporary full-time position to work on the implementation of Energy Evolution projects as well as door sealing and ground source heat pump projects to increase energy efficiency and conservation within municipal facilities.

Financial and resource implications of the Climate Change Master Plan will be further explored in the Energy Evolution report coming in the new year.

## ACCESSIBILITY IMPACTS

Accessibility impacts will be assessed as part of the development of the eight priority actions in the Climate Change Master Plan and Energy Evolution projects.

## ENVIRONMENTAL IMPLICATIONS

The Climate Change Master Plan is a framework for how Ottawa will mitigate and adapt to climate change over the next three decades. It is structured to support limiting global warming to 2ºC and striving to limit global warming to 1.5ºC and for Ottawa to become a resilient city.

Energy Evolution sets the framework for what it would take for Ottawa to reduce emissions by 80% or 100% by 2050. It is a renewable energy strategy designed to

manage energy consumption, promote the use of renewable energy and advance local economic development opportunities in Ottawa.

## TECHNOLOGY IMPLICATIONS

There are no technology implications as part of this report. Technological solutions may be a factor in the implementation of the actions under Energy Evolution.

## TERM OF COUNCIL PRIORITIES

This work aligned with the previous 2014-2018 term of Council Sustainable Environmental Services Strategy Priority to provide sustainable environmental services that balance protection of our natural resources and support the growth of the city with the duty to ensure fiscal sustainability and meet legislative requirements in the delivery of municipal services.

This work also aligns with the current 2019-2022 Term of Council Priorities, Environmental Stewardship, to grow and protect a healthy, beautiful, and vibrant city that can adapt to change.

## SUPPORTING DOCUMENTATION

Document 1 Municipal Scan of Canadian Climate Change Plans

Document 2 City of Ottawa Climate Change Initiatives

Document 3 Summary of the 2017 and 2018 GHG Inventories

Document 4 Draft Climate Change Master Plan

Document 5 Energy Evolution Status Update

Document 6 Energy Evolution Phase 1 Project Updates

Document 7 Energy Evolution Phase 2 Pathway Studies

Document 8 Catalyst Project Program Summary Report

Document 9 2017 Community Energy Innovation Fund Project Status Update

Document 10 Modelling Ottawa's Greenhouse Gas Emissions to 2050: Draft of Results

Document 11 Data, Methodologies, and Assumptions Manual

Document 12 2017 Hydro Ottawa Dividends Project Status Update

Document 13 Proposed Spending Plan for Outstanding Hydro Ottawa Dividend Surplus

**DISPOSITION**

Planning, Infrastructure and Economic Development will coordinate the Climate Change Master Plan with input from various departments to implement the eight priority actions. As the project evolves into implementation of Energy Evolution actions, other departments will be the lead on various projects.