PUBLIC WORKS COMMITTEE
REPORT 21-003
AS AMENDED BY COUNCIL ON FEBRUARY 24, 2021

1:30 p.m.
Friday, February 19, 2021
Council Chambers
Hamilton City Hall
71 Main Street West

Present: Councillors A. VanderBeek (Chair), N. Nann (Vice-Chair), C. Collins, J.P. Danko, J. Farr, L. Ferguson, T. Jackson, S. Merulla, E. Pauls, and M. Pearson

Absent with Regrets: Councillor T. Whitehead – Personal

THE PUBLIC WORKS COMMITTEE PRESENTS REPORT 21-003 AND RESPECTFULLY RECOMMENDS:

1. Corporate Energy and Sustainability Policy (PW14050(a)) (City Wide) (Item 8.1)

(a) That the City of Hamilton adopt the revised Corporate Energy and Sustainability Policy attached as Appendix “A” to Public Works Committee Report 21-003;

(b) That all Boards and Agencies be encouraged to adopt the policy and actively participate towards the stated reporting, targets and goals; and,

(c) That staff provide annual corporate-wide energy updates to the Public Works Committee reporting on energy results and progress.

2. Upper Gage Avenue between Rymal Road East and Stone Church Road East – Roadway Safety Audit Update (PW21007) (Ward 6) (Item 9.1)

(a) That the speed limit on Upper Gage Avenue between Rymal Road East and Stone Church Road East be reduced to 40 km/h;

(b) That the speed limit on Royal Vista Drive between Templemead Drive and Upper Gage Avenue be reduced to 30 km/h in alignment with the school zone;

(c) That the speed limit on Templemead Drive between Ingrid Court and Tudor Street be reduced to 30 km/h in alignment with the school zone; and,

(d) That Upper Gage Avenue between Rymal Road East and Stone Church Road East be designated as a Community Safety Zone.

3. City of Hamilton's Cemeteries By-law Update (PW21005) (City Wide) (Item 9.2)

That City of Hamilton By-law No. 12-151, being a By-law respecting the City of Hamilton's Cemeteries, be amended as detailed in Appendix "A" attached to Report PW21005.

4. Moving Hamilton Towards a Zero Plastic Waste Plan (PW21006) (City Wide) (Item 9.3)

(a) That Appendix "B" attached to Public Works Committee Report 21-003 respecting the City of Hamilton Strategy to Reduce Single-Use Plastics be approved; and,

(b) That staff continue to participate in consultation opportunities and provide comments on behalf of the City, on proposed Federal and Provincial legislation related to single-use plastics.

5. Canada Healthy Communities Initiative Intake One (FCS21020) (City Wide) (Added Item 9.4)

(a) That the Hamilton Street Art Festival 2021 Project be approved as the City of Hamilton's submission for consideration to the Community Foundations of Canada for the requested funding amount of up to $250,000 in accordance with the terms and conditions associated with the Canada Healthy Communities Initiative;

(b) That the Mayor and City Clerk be authorized to execute all necessary documentation, including Funding Agreements to receive funding under the Canada Healthy Communities Initiative with content satisfactory to the General Manager, Finance and Corporate Services, and in a form satisfactory to the City Solicitor;

(c) That the City Solicitor be authorized and directed to prepare any necessary by-laws for Council approval, for the purpose of giving effect to

the City's acceptance of funding from the Canada Healthy Communities Initiative for the Hamilton Street Art Festival 2021 Project;

(d) That copies of Report FCS21020 be forwarded to local Members of Parliament; and,

(e) That staff report back on a recommended project for the City to submit to the second intake to the Canada Healthy Communities Initiative expected in May 2021.

6. Green Acres Park Pedestrian Pathway Replacement and Sidewalk Repairs on Valley Drive, Felker Crescent and Faircourt Drive, Hamilton (Ward 5) (Added Item 10.1)

(a) That $130,000 be allocated to sidewalk repairs on Valley Drive, Felker Crescent and Faircourt Drive in Ward 5, and that the capital works be funded by utilizing the Ward 5 – 2021 Minor Maintenance Account (#4031911605);

(b) That $190,000 be allocated to the replacement of the pedestrian pathway in Green Acres Park, and that the capital works be funded by utilizing the Ward 5 – 2021 Minor Maintenance Account (#4031911605); and,

(c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

7. Designation of the Slope (Hill) at Lake Avenue and Huckleberry Drive, Hamilton, as a Sanctioned Tobogganing Location on City Property (Ward 5) (Added Item 10.2)

WHEREAS, at its meeting of February 10, 2021, Council removed the clause (d) that no further sites be added as designated tobogganing hills within the City, from Item 10 of the General Issues Committee Report 17-025, respecting Report PW15086(c) - Identified Tobogganing Locations on City Property, in order to introduce additional tobogganing locations within the City of Hamilton, following on-site reviews by Recreation, Parks and Risk Management staff and subject to the availability of operational funding to support additional tobogganing hills.

THEREFORE, BE IT RESOLVED:

(a) That staff of Recreation, Parks and Risk Management be directed to perform an on-site review and assess the operational funding required to designate the slope (hill) at Lake Avenue and Huckleberry Drive as an Identified Tobogganing Location on City Property; and,

(b) That upon a successful review by staff, staff be directed to make the necessary amendments to the Identified Tobogganing Locations on City Property.

8. Appointments to the Keep Hamilton Clean and Green Committee for the 2018-2022 Term (Item 13.1)

~~That the appointments to the Keep Hamilton Clean and Green Committee for the 2018-2022 Term be approved and released publicly following approval by Council.~~

That Diana Meskauskas and Michelle Tom be appointed to the Keep Hamilton Clean and Green Committee for the remainder of the 2018-2022 Term of Council or until such time as a successor is appointed by Council.

FOR INFORMATION:

(a) CHANGES TO THE AGENDA (Item 1)

The Committee Clerk advised of the following changes to the agenda:

4. COMMUNICATIONS (Item 4)

4.1 Correspondence from Fiona Parascandalo respecting Item 9.2 - City of Hamilton's Cemeteries By-law Update (PW21005) (City Wide)

Recommendation: Be received and referred to the consideration of Item 9.2 - City of Hamilton's Cemeteries By-law Update (PW21005) (City Wide).

5. DELEGATION REQUESTS (Item 5)

5.2 Robert Cook, Ontario Waste Management Association, respecting an Endorsement of the City of St. Catharines' resolution on Development Approval Requirements for Landfills (Bill 197) (for a future meeting)

9. DISCUSSION ITEMS

9.4 Canada Healthy Communities Initiative Intake One (FCS21020) (City Wide)

11. NOTICES OF MOTION (Item 11)

11.1 Green Acres Park Pedestrian Pathway Replacement and Sidewalk Repairs on Valley Drive, Felker Crescent and Faircourt Drive, Hamilton (Ward 5)

11.2 Designation of the Slope (Hill) at Lake Avenue and Huckleberry Drive, Hamilton, as a Sanctioned Tobogganing Location on City Property (Ward 5)

The agenda for the February 19, 2021 Public Works Committee meeting was approved, as amended.

(b) DECLARATIONS OF INTEREST (Item 2)

There were no declarations of interest.

(c) APPROVAL OF MINUTES OF THE PREVIOUS MEETING (Item 3)

(i) February 1, 2021 (Item 3.1)

The Minutes of the February 1, 2021 meeting of the Public Works Committee were approved, as presented.

(d) COMMUNICATIONS (Item 4)

(i) Correspondence from Fiona Parascandalo respecting Item 9.2 - City of Hamilton's Cemeteries By-law Update (PW21005) (City Wide) (Added Item 4.1)

The correspondence from Fiona Parascandalo respecting Item 9.2 - City of Hamilton's Cemeteries By-law Update (PW21005) (City Wide) was received and referred to the consideration of Item 9.2.

(e) DELEGATION REQUESTS (Item 5)

(a) The following delegation requests were approved:

(i) Geoff Ondercin-Bourne and Ed Reece, Council of Canadians, respecting Solar Retrofitting of Public Buildings in Hamilton (for today's meeting) (Item 5.1)

(ii) Robert Cook, Ontario Waste Management Association, respecting an Endorsement of the City of St. Catharines' resolution on Development Approval Requirements for Landfills (Bill 197) (for a future meeting) (Added Item 5.2)

For further disposition respecting Item 5.1, refer to Item (g)(i).

(f) CONSENT ITEMS (Item 6)

(i) Interview Sub-Committee to the Public Works Committee Minutes - February 19, 2021 (Item 6.1)

The Minutes of the February 19, 2021 meeting of the Interview Sub-Committee to the Public Works Committee, were received.

(g) PUBLIC HEARINGS / WRITTEN DELEGATIONS / VIRTUAL DELEGATIONS (Item 7)

(i) Geoff Ondercin-Bourne and Ed Reece, Council of Canadians, respecting Solar Retrofitting of Public Buildings in Hamilton (Added Item 7.1)

Geoff Ondercin-Bourne, Council of Canadians, addressed the Committee respecting Solar Retrofitting of Public Buildings in Hamilton, with the aid of a handout.

The delegation and handout from Geoff Ondercin-Bourne, Council of Canadians, respecting Solar Retrofitting of Public Buildings in Hamilton, were received.

(h) STAFF PRESENTATIONS (Item 8)

(i) Corporate Energy and Sustainability Policy (PW14050(a)) (City Wide) (Item 8.1)

Tom Chessman, Manager, Energy Initiatives, addressed Committee respecting Report PW14050(a), Corporate Energy and Sustainability Policy, with the aid of a presentation.

The presentation, respecting Report PW14050(a), Corporate Energy and Sustainability Policy, was received.

For further disposition of this matter, refer to Item 1.

(i) NOTICES OF MOTION (Item 11)

(i) Green Acres Park Pedestrian Pathway Replacement and Sidewalk Repairs on Valley Drive, Felker Crescent and Faircourt Drive, Hamilton (Ward 5) (Added Item 11.1)

The Rules of Order were waived to allow for the introduction of a Motion respecting Green Acres Park Pedestrian Pathway Replacement and

Sidewalk Repairs on Valley Drive, Felker Crescent and Faircourt Drive, Hamilton (Ward 5).

For further disposition of this matter, refer to Item 6.

(ii) Designation of the Slope (Hill) at Lake Avenue and Huckleberry Drive, Hamilton, as a Sanctioned Tobogganing Location on City Property (Ward 5) (Added Item 11.2)

The Rules of Order were waived to allow for the introduction of a Motion respecting the Designation of the Slope (Hill) at Lake Avenue and Huckleberry Drive, Hamilton, as a Sanctioned Tobogganing Location on City Property (Ward 5).

For further disposition of this matter, refer to Item 7.

(j) GENERAL INFORMATION / OTHER BUSINESS (Item 12)

(i) Amendments to the Outstanding Business List (Item 12.1)

The following amendments to the Public Works Committee's Outstanding Business List, were approved:

(a) Item Requiring a New Due Date:

(i) Proposed City Hall Forecourt Security Enhancements
Item on OBL: ABI
Current Due Date: February 19, 2021
Proposed New Due Date: March 22, 2021

(b) Item Considered Complete and Needing to be Removed:

(i) Moving Hamilton Towards a Zero Plastic Waste Plan
Addressed as Item 4 on today's agenda - Report PW21006
Item on OBL: AY

(k) PRIVATE AND CONFIDENTIAL (Item 13)

Committee determined that discussion of Item 13.1 was not required in Closed Session, so the item was addressed in Open Session, as follows:

(i) Appointments to the Keep Hamilton Clean and Green Committee for the 2018-2022 Term (Item 13.1)

For further disposition of this matter, refer to Item 8.

(I) ADJOURNMENT (Item 14)

There being no further business, the Public Works Committee was adjourned at 4:12 p.m.

Respectfully submitted,

Councillor A. VanderBeek
Chair, Public Works Committee

Alicia Davenport
Legislative Coordinator
Office of the City Clerk

2020

Corporate Energy and Sustainability Policy

CITY OF HAMILTON

ENERGY, FLEET AND FACILITIES MANAGEMENT DIVISION
PUBLIC WORKS DEPARTMENT

EXECUTIVE SUMMARY

The City of Hamilton's (City) first Corporate Energy Policy (PW07127) was created and adopted by Council in 2007. This policy calls for a review every five (5) years. Regular review of the policy is beneficial to further define its goals, targets and policy actions as regulatory framework, technologies and energy industries evolve.

The latest City of Hamilton's Corporate Energy and Sustainability Policy (CESP) will be maintaining its current corporate energy intensity reduction targets of 45% in 2030 and 60% in 2050 as compared to a 2005 base year. The original target of 20% reduction by 2020 was met, and the current energy intensity reduction is 25% less than the base year. Meeting these targets will also put Hamilton on track to become a net zero carbon municipality.

The purpose of the CESP is to provide City staff and external stakeholders with a set of guidelines and protocols to assist in the making of decisions or choices relative to energy using equipment, processes, systems and activities. The intent for these guidelines, once they are implemented will lead to further energy reduction and further emissions reduction which will result in a direct benefit the City of Hamilton financially and environmentally.

In 2008, the City created and approved the City's first corporate Energy Commodity Policy (PW08144/FCS08114). The Energy Commodity Policy is intended to provide the framework necessary to allow The City of Hamilton the means to procure the necessary quality and quantity of energy commodities in an efficient, timely, and cost-effective manner, while maintaining the controls necessary for a public institution in accordance with the Energy Commodity Policy. The energy Commodity Policy was integrated into the Corporate Energy Policy in 2014 to form one cohesive policy document for ease of reference and continues with this iteration of the Corporate Energy and Sustainability Policy herein.

The CESP is also integral to the success of meeting the revised environmental emission targets established through the climate change task force. The previous target for 50% greenhouse gas emissions remains, a new target of net zero emissions by 2050 has been put in place. This result can be achieved through a combination of energy conservation and demand management, renewable energy supply and through the purchase of environmental offsets e.g. carbon credits. The City's revised energy and emission targets are outlined in the table below.

Table 1: Corporate Energy Intensity and Emission Reduction Targets

Year	Energy Intensity Reduction Targets	Emissions Reduction and Offset Target
2030	45%	50%
2050	60%	100% (Net 0)*

* Revised target, previously 80% reduction by 2050.

The focus of this policy continues to be on corporate energy and sustainability activities, dealing with City owned assets.

The City of Hamilton's CESP is designed to:

- Facilitate the achievement of City-wide energy and emission reduction targets;
- Address legislated reporting requirements;
- Define policies for capital investment related to energy;
- Define policies related to energy procurement;
- Address regulations concerning greenhouse gases (GHG) emissions.

The City of Hamilton's CESP incorporates the following key focus areas:

1. Mitigation of Energy and Fuel Consumption
   - Reduction of energy and fuel use to facilitate achievement of specified targets

2. Specific Energy and Sustainability Policies and Policy Actions

   - Base Building Standards;
   - Project Approval Processes;
   - Incentive/ Funding Programs, Life Cycle Analysis;
   - GHG Emissions, Reporting and Protocol;
   - Fuel Reduction Targets;
   - Hamilton Water Energy Reporting;
   - Energy Reserve;
   - Energy Efficient Lighting;
   - Building Automation Systems;
   - Sustainable Building;
   - Energy Efficient Equipment;
   - Generation, Cogeneration, District Energy and Renewable Energy;
   - Emergency Generators and Back-Up Power Systems;
   - Monitoring and Verification;
   - Building Labelling;
   - Energy Procurement;
   - Renewable Energy.

3. Energy Commodity Policy

   - All Energy specific purchasing policy related to the: commodities, sales, delivery (rates) and storage of energy commodities including hedging agreements. Detailed in section 7.0.

4. Legislated Programs and Reporting Requirements

   - The Public Works, Energy Initiatives section will be responsible for reporting on all City of Hamilton corporate energy consumption reductions, cost savings

initiatives and associated environmental emission reductions associated with energy conservation, sustainability and demand management on an annual basis at a minimum as required by the current provincial legislation.

- At least once every year, energy consumption, energy intensity, GHG emissions and energy costs will be reported to City council describing the performance of the City's energy program.

- Additionally, Public agencies are required to report annually to the province and publish on the provincial website and intranet site and make available to the public in printed forms at its head office, the public agency's Energy Consumption and Greenhouse Gas Emission Template as required by current legislative requirements.

- As required by current provincial legislation, Public agencies are required to submit to the Minister, publish on its website and intranet site and make available to the public in printed forms at its head office, the public agency's five year conservation and demand management plan to outline the actions to reduce and optimize energy use and reduce environmental emissions and throughout all City departments.

5. Boards and Agencies

- All City Boards and Agencies are encouraged to adopt the revised policy and actively participate towards the stated reporting, targets and goals.

6. Alignment with Community Energy Plan

- City of Hamilton is encouraged to actively participate towards the stated reporting, targets and goals of the community-based plan once that plan is endorsed by Council.

The City has maintained a commitment to managing the energy portfolio within the ever-evolving energy and regulatory environment, incorporating energy related policies and energy efficiency into project and operational decision-making and setting targets to achieve reductions in energy intensity and GHG emissions. The specific focus areas of the policy are further defined in the sections to follow.

1.0 MITIGATION OF ENERGY CONSUMPTION

Building on the success of the CESP to date (25% energy intensity reduction as of 2019); it is necessary that the City continue to move forward with its energy and sustainability strategy.

The City will need to achieve its targets through a combination of:

1. Corporate Energy and Sustainability Committees;

2. Annual reporting on energy use, energy intensity, emissions and energy management plan;
3. Building Environmental Standards;
4. Monitoring and Targeting of Existing/New/Retrofitted Buildings;
5. Investment in Energy Efficiency - Existing Buildings;
6. Implementation of Energy Efficient Design - Major Renovations / New Construction;
7. Implementation of Energy Management Policies related to Renewable Energy, Environmental Impact;
8. Optimization of energy use by Hamilton Water;
9. Prudent management of energy commodity purchasing.

1.1 Corporate Energy and Sustainability Committee (CESC)

The CESC provides a vehicle for key staff to work together in developing energy plans and strategies from each of their divisions. The CESC will continue to have lead responsibility and accountability for achieving future energy reduction targets.

Policy Actions – CESC

- Each committee shall consist of key representatives from within the divisions including Directors, Managers and other members of the management section as well as project managers and advisors e.g. Energy Initiatives section.
- Each CESC will oversee the development of respective Energy Conservation and Development Plans for achieving targeted results.
- Each CESC will monitor energy intensity, energy usage, GHG emissions, where applicable to address areas of concern, promote best practices and develop measures for energy efficiency improvements and GHG emissions reductions.

1.2 Annual Reporting

At least once every year energy intensity, energy consumption, emissions and energy costs will be reported to City council describing performance of the City's energy program for City-owned assets using various key performance indicators (KPIs). KPIs assist in tracking progress and identifying areas of concern or focus for energy and emissions reductions. These reports are to be posted on the City web site.

In addition, reporting of corporate energy use, emissions or other energy-related items, including Conservation and Demand Management (CDM) plans are required to be submitted to provincial and/or federal regulatory bodies. CDM plans are currently required by the province to be reviewed, evaluated and updated every five years.

Policy Actions – Corporate Annual Reporting

- The Public Works, Energy Initiatives section will be responsible for reporting on all of Hamilton corporate energy intensity, energy consumption, emissions, costs, consumption reductions, cost savings initiatives, conservation and demand management on an annual basis.
- The Public Works, Energy Initiatives section will be responsible for reporting on all of Hamilton corporate energy consumption, associated emissions, energy conservation and demand management plans when and as required by provincial and/or federal legislation.

1.3 Building Environmental Standards

Efficient building operation must be defined in order to be managed. Once standards for efficient operation are quantified, operation and maintenance effectiveness can be measured.

The following temperature settings apply to all City facilities unless a deviation from the standard is required as determined by Facilities Management due to mechanical or system limitations:

Policy Actions – Base Building Minimum Standards (Building Temperatures)

- Indoor temperature settings will follow ASHRAE standards for indoor temperature target of 22 C. All spaces during occupied periods will be set at 22 degrees Celsius (72°F) during the winter and 24 degrees Celsius (75°F) during the summer. Where available, occupants will be given the temporary capability of varying temperature +/- 1 degree Celsius (2°F), resulting in 21-23°C (70-73°F) for heating and 23-25°C (74-77°F) for cooling.
- Indoor temperature settings in all spaces during unoccupied periods will be set at 18°C (64°F) during the winter and 27°C (81°F) during the summer. The exception is for pre-heating or pre-cooling periods necessary to maintain building system performance during occupied periods, especially during adverse weather conditions.

Occupants who control their own thermostats are required to adhere to these temperature standards also. In City leased office spaces, temperature conditions for occupied and unoccupied period within the Energy Policy should be established as part of building lease agreements if applicable.

The following indoor pool water temperature settings apply to all City facilities operating pools unless a deviation from the standard is required as determined by Facilities Management due to mechanical or system limitations:

Policy Actions – Base Building Minimum Standards (Pools)

- Main pools should not exceed 29.4°C (85°F);
- Warm/teaching pools should not exceed 34.4°C (94°F);
- During the Summer (mid-June to mid-September), decrease the main pool temperatures to 28.9°C (84°F). For the remainder of the year, set at no higher than 29.4°C (85°F).

A performance standard must be measurable and quantifiable. The following are examples of additional standards of performance for City of Hamilton buildings:

Policy Actions – Base Building Minimum Standards

- Domestic hot water tank temperature (50°C).
- Minimum light levels in offices, hallways, storage areas, etc. set according to IES guidelines and further detailed in Section 5.4.
- Maximum CO2 level in offices, resident spaces, etc. (e.g. 700 ppm above ambient)
- Fan operation: when outdoor air temperature permits, provide free cooling any time the outdoor temperature is below the required system supply temperature outdoor air intake dampers are to be optimized for energy efficient operation while maintaining indoor air quality.

When it comes time to evaluate energy efficiency measures (e.g. lighting retrofits, control of fresh air volume using CO2, etc.), these should provide useful guidelines that can be adopted with the Energy Initiatives section approval.

Definitions of the standards are not arbitrary. The standards must reflect building code requirements, good Operation & Maintenance practices, and occupant needs.

The National Energy Code of Canada for Buildings (NECB) is an energy code for New Buildings that defines a set of minimum energy performance requirements for various building components. The *National Energy Code of Canada for Buildings 2017* (NECB), sets out technical requirements for the energy efficient design and construction of new buildings. NRC and NRCan are publishing this interim edition of the NECB in response to proposals received that improve the overall energy performance of buildings over the 2015 edition. Modelling for these changes indicates a potential energy efficiency improvement of between 10.3 and 14.4 % over the NECB 2011. The 2017 edition is an important step toward Canada's goal for new buildings, as presented in the Pan-Canadian Framework, of achieving 'Net Zero Energy Ready (NZER)' buildings by 2030.

In terms of Building environmental standards in this section, there are several general best practices that are recommended to be followed by any facility with HVAC equipment. These are listed below:

- Provide thermostats and controls that allow HVAC equipment to be controlled in each `Thermal Zone` within the facility.

- Provide Automatic Controls that shut-off ventilation systems when spaces are unoccupied and for nighttime setback of heating and cooling systems.

- Provide Outdoor Air Dampers that close automatically when the ventilation system is turned off.

- Provide ventilation `economizers` that can bring in extra outdoor air for free-cooling and water-side economizers that can save energy by bypassing the chiller plant.

- Right size equipment for each space and provide air-balancing to all areas. Use equipment with maximum possible efficiency for each application.

- Provide heat recovery of exhaust gases where feasible.

- Provide sealing of all ductwork, and insulation and protection of ductwork located outside of conditioned spaces.

1.4 Existing Buildings

Conservation and Demand-Side Management (CDM) activities include efficiency upgrades to energy consuming systems. CDM Retrofits tend to be initiatives where a new energy efficient technology or group of technologies are added or retrofit within a facility or group of facilities. These measures can benefit the City through:

- Reduced Energy Demand & Consumption
- Reduced Energy Costs
- Reduced Environmental Emissions (GHG reductions)
- Reduced Maintenance Costs and improved reliability
- Reduced Exposure to Energy Market Volatility (Risk Mitigation)
- Improved Working Environments
- Improved Productivity

1.5 Retrofits and Capital Renewal/Life Cycle Replacements

Capital Renewal/ Life Cycle Replacements are generally managed by the division who carries responsibility for operating and maintaining the existing or original equipment e.g. *Public Works, Energy, Fleet and Facilities Management*. Typical projects include major capital replacements of chillers, boilers, roofs, windows, HVAC, fans, pumps, piping etc. The intent is to make CDM part of the City’s normal course of business for all facility and operational retrofits, including capital renewal and life cycle replacement projects.

Policy Actions – Project Approval Process

- This policy mandates the Energy Initiatives section involvement in the review of projects at the earliest possible concept stage. Energy Initiatives section approval of projects will only be given with appropriate review and life cycle analysis. This ensures that options for improving energy efficiency are considered, evaluated and quantified in terms of life cycle costing analysis, including cost, maintenance and emission reductions.

- Projects can continue to be managed by the division who carries responsibility for operating and maintaining existing or original equipment or the Energy Initiatives section can take the project lead as required (lighting, Building Automation Systems, renewable energy or new technology applications).

Typical equipment to be considered for this process includes:

- HVAC equipment (e.g. boilers, chillers, pumps, motors etc.);
- Lighting and controls;
- Building envelope (e.g. roofs, insulation, windows and doors etc.);
- Water use (e.g. pools, toilets, water reclaim etc.);
- BAS (Building Automation System) controls;
- Process improvements;
- Back-up generators;
- Any other energy consuming device.

These types of projects generally follow 4 phases:

1. Project Identification & Feasibility - Energy Audits, Feasibility Analysis or Detailed Condition Assessments;
2. Planning & Budgeting - Project Financing, Incentives, Business Case & Approvals;
3. Implementation – Tender, Project Execution, Project Management, Commissioning;
4. Monitoring & Verification – Measure and verify results, report achievements.

Policy Actions – Incentive / Funding Programs, Life Cycle Analysis, Approvals

The Energy Initiatives section will be a resource for implementation and follow-up of the recommended five (5) step process (below). In the following recommendations all facility and operational CDM retrofits and capital renewal/ life cycle replacement projects are required to adopt the following procedures.

1) Identify government and utility funding programs (incentives):

Incentives funding opportunities for CDM projects and feasibility studies are available.

Most government and utility funding programs are designed to encourage greater levels of energy efficiency or CDM activities which would not have been normally achieved without these funds. As new energy efficient product costs decline or become more cost effective due to higher utility rates, and as design techniques become main stream, through code changes or reduction targets achieved, funding for these activities will likely be reduced or eliminated altogether. It should be noted that all funding programs are established with a defined or limited budget. The main goal is to ensure we secure all eligible incentives.

Some funding programs are prescriptive (product specific) while others consider custom measures, often requiring detailed engineering analysis. In some cases, a feasibility study may be necessary.

It should be noted that most government and utility incentive /funding programs will NOT provide incentives for project feasibility studies or CDM retrofit / renewal projects that have been initiated by way of a purchase order prior to incentive application approval. Pre-approval of incentive-based projects before the project is initiated is the norm.

2) Determine the project base case(s) vs. the alternative CDM option(s):

For CDM retrofit projects the “base case” is usually the existing equipment. For Capital Renewal/ Life Cycle Replacement Projects the “base case” is typically the standard efficiency replacement option.

In some cases, the funding can be for prescriptive measures. Nevertheless, the existing, base case and energy efficiency options must all be considered for tracking and reporting purposes.

3) Identify the following for each option on an annual and life cycle cost basis:

- Associated project / equipment costs;
- Energy consumption and energy demand (e.g. kWh, kW, GJ, M3, L – see definitions);
- Energy consumption reduction, demand reduction and cost savings;
- Emission reduction;
- Maintenance and operational savings;
- Impact with and without financial incentives or funding.

Energy rate escalators should be factored in using most recent data and forecasts. Determining the equipment cost, energy consumption, emission reduction and cost savings associated with all options is necessary for qualifying for incentive funding and for internal tracking purposes.

4) Provide Project information to the Energy Initiatives section:

Project information will be used by the Energy Initiatives section for tracking, monitoring and verification for reporting to City Council and Senior City Management, including incentives.

5) Identify project recommendations for proceeding with the base case or the more energy efficient option and reasons/ rationale why:

Complying with these steps will ensure that energy efficiency and emissions are considered in all projects and for incentives applications which will in most cases compare an energy efficient option to a base case. It also provides the City with the ability to track all energy saving initiatives and their environmental and cost savings.

1.6 Major Renovations and New Construction

Major Renovations are similar to new construction in that they involve major capital and planning involvement. New Construction projects involve the complete design, development and construction of a new facility.

1.6.1 Evaluation of LEED and Green Building Design Options

To promote energy efficiency and environmentally friendly building practices, the City of Hamilton encourages LEED (Leadership in Energy and Environmental Design) design where practical. LEED construction will be compared to other options using Life Cycle Costing to assist on deciding whether the City wishes to use LEED or other design alternatives, according to end use requirements and budget constraints.

Such design alternatives include zero carbon buildings, which are buildings that are highly energy efficient and fully powered from on-site and/or off-site renewable energy sources or through procured carbon offsets to fully offset carbon emissions associated with the operations. The ZCB-Design Standard provides requirements that guide the design of new buildings and the retrofit of existing ones, to best empower buildings to achieve zero carbon operations. For ZCB-Design v2 certification, design must carefully consider embodied carbon, refrigerants and airtightness.

1) Major Renovations (>50% gross floor area) - All major renovations of City owned facilities will require a life cycle cost assessment of the energy, financial and environmental benefits associated with:

- Base case design;
- LEED Certified design;
- LEED Silver design (including ZCB).

2) New Construction - All new City facilities to be constructed will require a life cycle cost assessment of the energy, emissions, financial and environmental benefits associated with having the building constructed according to:

- Base case design;
- LEED Certified design;
- LEED Silver design (including ZCB);
- LEED Gold design (including ZCB);
- LEED Platinum design (including ZCB).

LEED and ZCB design for new construction and major renovations makes good business sense, in that a high-performance green building vs. conventional inefficient buildings can reduce energy consumption and greenhouse gas (GHG) emissions and result in lower ongoing operating costs.

Table 2: Sustainable Building Standards

Type	Space	LEED Gold (Including ZCB)	LEED Certified (Including ZCB)	Corporate Energy Policy (Section 5.11)
New Construction	>500m^2	✓		
	<500m^2		✓	
Major Renovations	>500m^2	✓		
	<500m^2			✓
Other Renovations	>500m^2			✓
	<500m^2			✓

1.7 Occupied Spaces Energy Management Policies

The following supplemental policies will apply for all buildings with occupied spaces that provide basic environmental services.

1.7.1 Temperature Setback: Smog / Constrained Electricity Supply Days

During smog days or electricity supply constrained periods which are typically associated with the highest peak price for energy, cooling season temperatures will be increased by an additional 2 degrees Celsius in an-effort to reduce energy consumption. The Energy Initiatives section will monitor peak demand days on behalf of the City and will send notifications out to the client group to potentially shift loads to off peak hours (where operationally possible) as per Section 6.2 of this policy.

1.7.2 After Hours 'Lights Out' Program

The City encourages the Lights Out effort for all applicable buildings where this can be integrated without concern for safety and for successful participation in events like Earth

hour once a year. There are two challenges to overcome with lights out program. The first is technological and the second is cleaning schedules. Given this:

- The City will work towards phasing in automated lighting control upgrades on City facilities as budgets allow, so that the City can lead by example by automatically turning off unnecessary lighting in City owned facilities after hours when the buildings are unoccupied. The use of motion control will be widely integrated.

- Where manual lighting controls exist in facilities, staff will continue to educate security guards, cleaning staff and maintenance staff on the importance of lighting only areas that are necessary during unoccupied periods.

1.7.3 Leased Office Spaces – Terms for Leases

In City leased office spaces, temperature conditions for occupied and unoccupied period within the Energy Policy should be established as part of building lease agreements and should comply with Section 1.3 of this policy.

2.0 EMISSIONS / GREENHOUSE GASES (GHG)

2.1 GHG Targets

The City of Hamilton's Corporate Energy and Sustainability Policy is integral to meeting the greenhouse gas emission reduction target of net zero emissions by 2050 relative to 2005 base year. These emissions are commonly known as operational carbon.

Corporately, achieving net zero greenhouse gas emissions means it is imperative that the City reduce its emissions sources. Efforts need to be focused on reducing consumption by utilizing energy efficient measures; moving toward more renewable energy sources (e.g. hydro, wind, solar, renewable natural gas) to power and heat City facilities and run City fleet; and potentially utilize emissions trading options as they become readily available.

Operational carbon is the carbon load created with the use of energy to heat and power a building. Embodied carbon, which is the carbon that is released in the manufacturing, production, and transportation of our building materials. As we continue to lower our operational carbon there will be a growing priority to also manage our embodied carbon. This will require development of a system of new targets and limits that will typically be found in new construction. In particular, LEED v4 speaks to embodied carbon and can be managed as per sections of this policy that relate to major renovations and new construction.

2.2 GHG Emissions Reporting

Policy Actions – Annual GHG Reporting

Reporting of Hamilton's corporate emissions will be coordinated and carried out by the Energy Initiatives section at least once per year. The results will be compiled and presented as per Section 1.2 of this policy and may be included in reporting of other City reporting requirements or those of associate membership groups as required.

2.3 GHG Protocol

Policy Actions – North American GHG Protocol

The City of Hamilton will comply with the North American GHG Protocol as the basis for its emissions calculations and in order to assess its carbon footprint.

The North American Greenhouse Gas Protocol (GHG Protocol) is the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol, a partnership between the World Resources Institute and the World Business Council for Sustainable Development, works with businesses, governments, and environmental groups around the world to build a new generation of credible and effective programs for tackling climate change.

It provides the accounting framework for nearly every GHG standard and program in the world - from the International Standards Organization to The Climate Registry - as well as hundreds of GHG inventories prepared by individual companies.

2.4 Validation and Verification

All carbon and emission reductions will be held in title by the City of Hamilton and will be managed by the Energy Initiatives Section. This includes the calculation, validation and verification of any carbon, greenhouse gas or other environmental attribute that can me monetized.

3.0 FLEET AND TRANSIT FUEL CONSUMPTION

The City of Hamilton manages a fleet of corporate vehicles to provide fleet and transit services. The corporate fleet vehicles include various vehicle types such as buses, waste collection vehicles, snow clearing trucks, street sweepers, light weight departmental vehicles and Fire and EMS vehicles. The fuels used for these vehicles are diesel, dyed

diesel, unleaded gasoline, propane and compressed natural gas (CNG). Corporate Average Fuel Economy (CAFE) is the traditional method for measurement of the fuel consumed per 100km driven. It is used to monitor improvements in fuel consumption efficiency and fuel management activities at a high level. The City of Hamilton CAFÉ reflects various vehicles types in the fleet, which should not be confused with similar vehicle specific fuel efficiency data used by the industry. CAFE measurement and reporting excludes Fire, EMS, Police and the consumption and use of dyed diesel.

Policy Actions – Fuel Reduction Targets

Utilizing CAFE as a measurement tool, the long-term targets for the collective vehicle fleet (including Transit) is a 20% reduction in fuel economy by 2030 using 2012 as the base year. Reaching this level of improvement will be achieved through measures guided by fleet and transit plans and policies.

3.1 Fleet Vehicles

The Green Fleet Strategy will provide a framework to develop current Fleet policies that will speak to managing fuel and efficiency of the vehicles through purchasing policies, operator training, utilizing lower emissions fuels and evaluating CNG, Bio-fuels or alternate fueling methods (i.e. electric, hydrogen) for alternatives to traditional fuels. Furthermore, the City has an Anti-idling By-law and a corporate fleet policy for anti-idling that assists in reducing fuel consumption and emissions.

Reducing emissions from fleet vehicles is part of a broader GHG reduction strategy to move the City to net zero emissions in 2050 and will be achieved through measures outlined in the new Green Fleet Policy, which is owned and developed by Fleet. The latest version of the Green Fleet Policy is expected to be presented to Council in Q1 2021.

3.2 Transit Vehicles

The City's Transit division is committed to exploring new technology as it pertains to future bus procurement. For the past 6 years, Transit has been steadily replacing its diesel fleet with CNG- powered buses. This has a significant impact on reducing operating costs and a favorable impact on GHG emissions.

As viable technologies shift to more sustainable options such as electric or hydrogen fuel cell vehicles, Transit will consider non-traditional vehicle types as an addition or replacement to their fleet of buses, provided the vehicles and any associated infrastructure is economically and environmentally feasible and fits within parameters of its cohesive transportation plan for the City.

The City's fleet and transit vehicles represent 40-50% of GHG emissions for the City. Efforts made to reduce usage and emissions in this area will significantly impact the City's emissions inventory and is integral to meeting emissions targets. The CNG bus fleet will

assess credible supply options to integrate renewable natural gas (RNG) into the fuel supply to help off-set emissions.

4.0 HAMILTON WATER

Energy use by HW facilities and operations accounts for approximately 39% of the City's energy use and 28% of the associated costs in 2019. It is the City's single most significant cost and represents great potential for sustainability opportunities including efficiency and renewable energy.

Reducing energy and emissions at Hamilton Water can be accomplished through measures such as water conservation, reduction of water loss, storm water reduction, and sewer system repairs to prevent groundwater infiltration. Implementing measures to address these items lead to reductions in energy use and result in savings due to recovering and treating lower quantities of stormwater and wastewater and treating and delivering lower quantities of water. At all times water quality and reliable system operability remain the primary objectives.

Opportunities for improving energy efficiency fall into three general categories:

1. Equipment upgrades;
2. Operational efficiency;
3. Modifications to facilities.

Equipment upgrades focus on replacing items such as pumps and blowers with more efficient equipment. Operational efficiency involves optimizing the amount of energy required to perform specific functions, such as wastewater treatment. Modifications to facilities, such as installing energy efficient lighting, occupancy control and efficient heating and cooling equipment reduce the amount of energy consumed by the facilities themselves.

Policy Actions - Hamilton Water Monitoring and Targeting

To move forward with energy efficiency improvements for Hamilton Water, this Policy establishes the metrics and targets for measuring and achieving success:

- The base year for reporting results will be 2011, as applicable;
- Energy intensity for water pumping stations will be reported in terms of kWh/MLD/m;
- Energy intensity for treatment plants and wastewater pumping stations will be reported in terms of kWh/MLD;
- Maximizing renewable energy through ancillary production;
- Green House Gases and emissions will also be reported in tonnes CO2e/MLD;
- Hamilton Water will implement an active strategy for cost efficiency while applying energy reduction/conservation methods.

An overall strategy and energy management plan that addresses the energy use at Hamilton Water will be developed and put in place to optimize energy intensity. This strategy will examine energy used for conveying and maintaining distribution of water, water treatment, stormwater and wastewater processes and further refined to suit Hamilton Water's business units.

Included in the Hamilton Water energy strategy will also be the development of renewable energy opportunities that consider various waste streams for renewable energy generation. Through this policy, the Energy Initiatives section will be consulted and provide input for life cycle analysis to evaluate these opportunities and leverage any available incentives.

As with other City of Hamilton renewable energy projects, the ownership and operation will be assessed such that the business case and other financial considerations that may benefit the City, include the option to have the Energy Initiatives section manage and operate the facility in a similar role to other existing operations (HRPI, Biogas, District Energy and Solar).

5.0 SPECIFIC POLICIES

5.1 Energy Reserve

The Energy Reserve was established to fund the Energy Initiatives section as well as other initiatives related to energy conservation and demand management (CDM). The Energy Reserve is created to fund the following activities:

- Fund the Public Works, Energy Initiatives section;
- Payback capital outlay;
- Mitigate unforeseen energy cost increases or budgetary shortfalls during the current budget cycle as a result of regulatory or utility rate adjustments;
- Energy audits and feasibility studies;
- Pilot projects for new energy technologies and renewable energy projects;
- Fund incremental retrofit project costs of higher efficiency options;
- Education and energy awareness programs.

From the previously approved council report, Corporate Energy Policy (PW07127):

- As savings in energy expenditures are identified, whether through reduced rates or energy CDM initiatives, it is proposed that the total amount of savings be base-transferred from the corresponding energy line (e.g. Hydro, Natural Gas) to the Energy Initiatives section.

- The Energy Initiatives section is also involved in reviewing historical billings from all energy suppliers. Under the microscope and with the group's specific knowledge and experience, the Energy Initiatives section has identified and will continue to identify, errors that have been made by these suppliers. These efforts

will result in recoveries of past overpayments. Recoveries from the previous budget year flow to the Energy Reserve, to be used as a source of funding.

- The Energy Initiatives section continues to identify sources of incentive funding for retrofit and other energy conservation initiatives. These incentives provided by energy suppliers and various levels of Government will help to mitigate the cost of improvements that will reduce the use of energy. These monies will be applied and directed as established within the Project Charter for the specific project as agreed to by all involved parties.

- Once the budget base for the Energy Reserve is established, all future savings in current energy expenditures could result in levy savings or could be used to fund further energy initiatives or both. Historic billing errors would continue to be directed to the Energy Reserve to fund future projects and Incentive payments would continue to be used to reduce the cost of conservation projects.

- Regarding City Boards and Agencies, the Energy Initiatives section will provide services on a contract and/or consultant basis. Any savings generated and proposed to be transferred to the Energy office, will be negotiated between the Energy Initiatives section and the Board or Agency.

Policy Actions – Energy Reserve

The Energy Reserve (112272) funds staffing costs for the Energy Initiatives section. In order to maintain a healthy reserve and secure the best leverage for funds on energy related projects, the energy reserve will also be used to fund specific and targeted projects or activities, as approved by the Manager, Energy Initiatives section to ensure compliance with the Corporate Energy and Sustainability Policy.

Funds that are attributed to any energy conservation demand management program, renewable energy revenues, energy related project revenues (e.g. leases or other payments), utility bill recovery (current year related recoveries will be returned to client budget, previous year related recoveries will go to reserve), carbon off-sets, demand response revenue and all utility incentives will be deposited into the Energy Reserve. In addition, revenue from renewable energy projects (solar lease or other) or fuel procurement (compressed natural gas or other) will be established as a means of funding ongoing activities required to manage these energy related services. Future operational budget savings will be transferred to the Energy Reserve to maintain an acceptable level of funding in the reserve.

Funds moving into or out of the Energy Reserve will be approved per this policy. These funds can be used to finance (in whole or in part) energy projects, energy studies, pilot projects and other similar activities. For instance, incremental costs for more efficient options could be financed by the Energy Reserve with the understanding that it will be paid back through savings.

5.2 Verification and Validation of Utility Bills

The Energy Initiatives section will monitor utility bills (verify and validate) for the correct application of energy rates, demand and energy consumption charges.

Policy Actions – Policy Action – Utility Bills Funds Recovery

Funds recovered through this activity will be deposited into the Energy Reserve with the following rules to apply:

- Billing recovery for costs related to usage from the current budget year will be returned to the client budget;
- Billing recovery for costs related to usage from the previous budget year will be deposited in the Energy Reserve.

5.3 Energy and Emission Reduction Projects - Lifecycle Cost Analysis

Policy Actions – Lifecycle Cost Analysis

Energy and emission related projects will be evaluated by the design/project team using Lifecycle Cost Analysis. This analysis must depict energy and emission reductions and the financial payback for the best overall outcome for the City. Designs and proposals shall include a base case option compared to more efficient options for staff to assess the long-term operating costs and emission reduction in order to make the appropriate decisions based on capital and operating budget constraints.

5.4 Lighting Technology

Policy Actions – Energy Efficient lighting Solutions

- The City will endeavor to use the most energy efficient and latest proven lighting technology as per current government Act, Regulation and or recommendation. The latest proven lighting technology has moved to the light emitting diode (LED) which is both highly efficient and a very long life which significantly reduces maintenance costs. To ensure optimum efficiency and quality, lighting shall be either Energy Star or Design Lights Consortium (DLC) Listed.
- The City will endeavor to further reduce electrical consumption by installing, where applicable, lighting controls including but not limited to daylight harvesting, occupancy, photocell and building automation system (BAS) controls.
- The City is committed to replacing or eliminating incandescent lighting where possible in order to comply with Energy Star or Design Lights Consortium Listings and any government Act, Regulation and or recommendation.

Lighting levels will be based on IES guidelines and be compliant with the Ontario Building Code (OBC). See attached links in References Section for additional lighting information.

5.5 Energy Management Standard – Building Automation Systems (BAS)

Policy Actions – BAS Modernization and Standardization

The introduction of multiple vendors created a need for a standard BAS specification that was developed by documenting the City's requirements.

- A master BAS specification will set out City's expectations that all vendors must adhere to and guidelines for hardware, software, and communication protocols.

BAS modernization policy to achieve goals and objectives noted below shall apply to:

- New Construction: All new City facilities to be constructed shall be evaluated for BAS installation using City's master BAS specification based on capital cost requirements, expected annual energy consumption reduction, and reasonable project payback. A general rule of thumb can be either a site of greater than 500 m2 of gross floor area or annual energy consumption of over 500,000 equivalent kWh (ekWh).
- Major Renovations (>50% gross floor area): All major renovations of City owned facilities of greater than 50% of their gross floor area shall be evaluated for BAS retrofit using City's master BAS specification based on capital cost requirements, expected annual energy consumption reduction, and a reasonable project payback.

Moving towards a concept of internet-based open protocol Building Automation Systems (BAS) will ensure that the City will have the ability to obtain competitive pricing from a list of BAS vendors that are already pre-qualified. Using these approved prequalified BAS vendors list will provide the City with an ability to have this open system and eliminating a potential need of corporate BAS service Contracts. City staff will also provide inputs to refine and establish effective and efficient control strategies to optimize equipment performance without sacrificing occupant's comfort or productivity.

The implementation of a Building Automation System (BAS) into existing facilities has been shown to reduce energy consumption in the order of 5%-20%, generating a return on investment in the range of 2-10 years. These systems provide flexibility for facilities to better regulate building temperatures, control indoor air quality, and allow for equipment schedules to be intricately tailored to the facilities requirements.

As BAS are modernized, they will be centrally controlled such that they can be monitored and adjusted from a single location to maintain building temperatures and quickly identify and correct energy waste. This will ensure consistent temperature control is maintained and monitored from a single location and will also build on the existing system the City already has in place for other facilities.

The goals and objectives for the BAS modernization moving forward through this policy are:

- Capital and maintenance cost reduction;
- Optimization of the existing BAS for energy consumption reduction and comfort improvement;
- Continuous expansion of the BAS to other facilities selected and prioritized by the City based on the energy consumption and savings opportunities.

The following table presents a summary of these generic guidelines:

Table 3: BAS Modernization Guidelines

Type	**Gross Space**	**BAS Modernization**	**Annual Energy Consumption - ekWh**	**BAS Modernization**
New Construction	>500m^2	✓	>500,000	✓
	<500m^2		>500,000	✓
Major Renovations	>500m^2	✓	>500,000	✓
	<500m^2		>500,000	✓

5.6 Roof Capital Replacement Evaluation

Policy Actions – Roof Replacement

As part of ongoing roof capital replacement evaluations that in addition to standard roof replacement that the feasibility of a “Green” or “White” roof be explored for City owned facilities that will be assessed using a life cycle costing analysis method. This process should also include the analysis of increasing the R value of the roof insulation if applicable.

5.7 Energy Efficient Equipment Purchasing

Policy Actions – Energy Efficient Equipment

When purchasing new equipment and appliances, the most optimal energy efficient option should be selected.

Equipment standards are identified through a long-standing standard of performance called ENERGY STAR®. The City will use Energy Star as a basis for minimum standards for energy efficiency and energy efficient products including the following:

- Household and commercial appliances
- Water heaters and other water heating equipment
- Furnaces and other space heating equipment
- Lamps and other lighting products
- Motors and transformers
- Electronic equipment
- Fenestration Products

ENERGY STAR® is trusted and a simple source that the City can use to identify products that are among the most energy-efficient on the market. Only manufacturers and retailers whose products meet the ENERGY STAR criteria can label their products with this symbol. ENERGY STAR in Canada is a voluntary program between Natural Resources Canada's Office of Energy Efficiency and organizations that manufacture sell or promote products that meet the ENERGY STAR levels of energy performance. ENERGY STAR in Canada is administered by Natural Resources Canada's (NRCan's) Office of Energy Efficiency (OEE).

We are recommending ENERGY STAR in order to:

- reduce energy costs;
- reduce electricity demand;
- reduce impact on the environment;

- Energy-efficient products on the market today can reduce energy costs by 25 to 50 percent, or even more, without compromising quality or performance;

- Investments in energy-efficient products can quickly pay for themselves and provide a significant return, making funds available for investment in your community;

- Energy-efficient products have an extended life and offer decreased maintenance;

- Incentives may be available for some equipment.

ENERGY STAR is easy to use and provides comprehensive tools and information with an online purchasing guide for specifying products that meet energy efficiency criteria.

- City Purchasing Policies adapt as a minimum standard Energy Star® rated equipment or equivalent for energy consuming devices such as appliances, photo copiers, computers, servers, computer monitors etc.

- All new and retrofit motors, heating equipment replacements (e.g. fans, pumps, water heaters, rooftop HVAC etc.,) specify premium efficiency motors as minimum standards. Where required the Energy Initiatives section will provide recommendations on minimum efficiency standards.

5.8 Energy Education and Awareness

Education and awareness programs on energy conservation, greenhouse gas emissions and climate change, play an integral role in achieving and sustaining reduction in energy use. Employ a range of educational tools to teach and educate staff about energy efficiency and the benefits of conservation to reinforce the link between individual behavior, energy use, the potential for savings, the reduction of GHG’s and climate change.

5.9 Electricity Generation, Cogeneration, District Energy and Renewable Energy

Generation or cogeneration of electricity or developing district energy or renewable energy projects can be an attractive way of improving efficiency, providing security of supply and reducing environmental emissions. These projects keep revenue and jobs in our local economy. The City will investigate opportunities for growth of district energy in targeted areas of the City to enhance economic development, improved reliability, energy efficiency and foster further GHG emission reductions. District energy provides for local, clean, renewable and embedded energy systems which support energy efficiency

solutions that are integrated with other City planning processes. District Energy systems are also an excellent solution to integrated community energy planning. District Energy offers a sustainable energy solution to address future Regional Energy Planning needs.

Policy Action – Generation, Cogeneration, District Energy and Renewable Energy

- All electricity generation, cogeneration and district energy or renewable energy projects are evaluated on a case by case basis, with the aid of independent third party technical, legal and financial expertise, through the Energy Initiatives section.
- The City will only construct clean or green generation, cogeneration, biomass or renewable energy projects.
- These projects shall consider the economic impact to the City, including overall efficiency gains, security of supply, environmental impact, life cycle analysis and the local economic benefits for City.
- The Energy Initiatives section is to be included in all generation, cogeneration, district energy, energy from waste and renewable energy project reviews well in advance of commitment to ensure all legal, technical and energy related issues have been considered and to allow for potential additional analysis.
- The City of Hamilton shall implement strategies with HRPI (Hamilton Renewable Power Incorporated) to identify opportunities which exist in the generation of renewable energy. This includes initiatives which will reduce greenhouse gas emissions, maximize revenue generation for the City of Hamilton and provide a sustainable atmosphere for energy renewal initiatives. This includes accessing incentives, participation in the assessment of alternatives and the operation and management of installations, energy strategies or commitments (commodity supply contracts, hedge strategies etc.).

5.10 Emergency Generators / Back-up Power Systems

Policy Action – Emergency Generators and Back-up Power Systems

The Energy Initiatives section is to be included, with adequate time, in the review of Emergency Generators and Back-up Power Systems, noting the following:

- All new or retrofit emergency and back up generation as well as back-up power system projects be evaluated well in advance of commitment to ensure all technical, environmental impacts, and energy related issues have been considered;
- All economic (life cycle analysis), energy efficiency and environmental benefits of converting to newer cleaner fuel options such as natural gas or dual fuel generation units vs. existing diesel-powered units;
- All new and retrofit back-up generation system projects are to evaluate the costs and feasibility of “synchronization” of this equipment with the facility so that these units can potentially be used for “Peak Shaving” when favorable market conditions exist.

5.11 Sustainable Buildings Policy

Policy Action – Sustainable Buildings

The City of Hamilton will establish, implement and maintain sustainable building practices for all new builds during the acquisition, planning, design, construction, operations, maintenance, renovation, and decommissioning to meet or exceed the requirements as summarized through section 5.11 below;

5.11.1 Sustainability in Design and Construction of City-Owned Buildings:

Further to section 1.6, for new builds or major construction new City-Owned buildings will be designed and constructed in a manner that mitigates the risks and impacts of future energy and carbon pricing (e.g., through passive design strategies, durable energy conserving building envelopes, etc.) and provides flexibility to incorporate emerging technologies that become cost effective in the future. (e.g., solar ready roofs, provisions for future geothermal, energy storage, etc.)

- The City will recognize the significant resource requirements and greenhouse gas impacts of new construction, as well as the value of the embodied carbon in its existing building stock. The ZCB-Design Standard provides requirements that guide the design of new buildings and the retrofit of existing ones, to best empower buildings to achieve zero carbon operations.

- As part of the business case development, the City will assess whether an identified real estate need of its programs or services can be met through its existing building portfolio and achieved in the absence of new construction.

5.11.2 Sustainability in existing City-Owned buildings:

The City will demonstrate excellence in sustainable practices in existing City-Owned Buildings and City-occupied buildings through the establishment of a BOMA BEST-like certification program or similar. Sustainable building practices employed by the City shall include:

- Monitoring and benchmarking the performance of all City-owned buildings;
- Conducting energy efficiency audits to identify opportunities for improvement;
- Integrating energy modeling, energy audits, lifecycle cost benefit analysis and sustainable return on investment analysis methodologies into routine lifecycle replacement and capital rehabilitation planning processes;
- Strengthening the integration and accountability with the Corporate Greenhouse Gas Management Plan through the creation of multi-year building energy retrofit plans that align with budget cycles, outline proposed energy efficiency and emission reduction upgrades, provide project-specific details and anticipated lifecycle cost benefits;
- Establishing requirements for determining an optimal building portfolio upgrade/retrofit strategy that extends over multiple budget cycles in support of the Corporate Greenhouse Gas Management Plan and creating a path to zero-carbon emissions for the building portfolio;
- Publicly sharing and communicating its sustainable building practices through the establishment and implementation of a Green Building Education Program that incorporates both passive public education tactics (e.g., building signage and online information) and active public engagement and awareness.

5.11.3 Sustainability in City Acquisition of Existing Buildings:

Prior to the acquisition of an existing building the City intends to retain for its own use or for lease to others, the City shall require an energy assessment be performed and integrated into the existing pre-acquisition process. The energy assessment will determine the building's energy consumption and greenhouse gas performance and the extent of upgrades needed to raise the energy performance to an optimized level of lifecycle cost benefit.

5.11.4 Sustainability in City Owned Buildings Leased to Others:

The policy standards for existing City-owned buildings (that are leased to others who are also responsible for sustainable building practices in those buildings) applies only when incorporated within the leasing agreements at the time of lease renewal or creation of a new lease agreement.

5.11.5 Sustainability in City-leased Buildings:

The City will understand the energy use and greenhouse gas impacts of the buildings it leases from others prior to entering leases and will consider these impacts as a part of its selection criteria.

5.12 Measurement and Verification

The purpose of Energy Project Measurement and Verification (M&V) is to verify energy savings resulting from activities that influence the energy consumption of a facility. This verified information will be used to track actual savings as mandated by the Green Energy Act and our progress towards our energy intensity targets.

Policy Actions – Monitoring and Verification

Project M&V option (Basic or Enhanced) shall be driven by incentive program requirements or as directed by the Energy Initiatives section throughout this section 5.12.

Energy Project Measurement and Verification (M&V) activities are intended to cover:

- Energy Conservation Measures;
- Demand & Load Management Projects;
- Large Capital Projects;
- Renewable Energy Projects;
- City-wide corporate energy reduction goals.

The objective of Energy Project M&V is to:

- Facilitate the economic analysis of implementing energy saving measures by establishing a high confidence level in reported energy savings that are obtained through energy related projects;

- Establish a process to ensure that all significant project activities related to energy undergo an appropriate level of measurement and verification;

- Provide a method for improving accuracy of reported progress toward energy goals on a portfolio wide basis.

The M&V protocol that the Energy Initiatives section will adhere to was developed by City Staff. This protocol was designed around the International M&V protocol (IMVP) standard and was modified where appropriate to suit the needs of the City

Generally, energy project M&V activities can be grouped into two major categories: Basic and Enhanced. Basic is concerned with Utility Bill analysis. Enhanced covers engineering calculations (using stipulated values and measurements), metering and monitoring (spot, short term, or continuous measurements), and simulation models using industry standard tools such as RETScreen from Natural Resources Canada. The Save on Energy web-site also provides a detailed guideline on Project Measurement and Verification Procedures which can also be used as a reference document.

When an energy retrofit project is initiated within the City of Hamilton, both the energy savings for the project and the associated Greenhouse Gas (GHG) emission reductions are to be determined for business case summaries. These numbers may also be used to begin energy project incentives process and may, therefore, require energy savings verification for third party sources.

5.13 Building Labelling

Policy Actions – Building Labelling

The City will adopt an industry standard building ranking energy system for appropriately sized corporate buildings. The Energy Initiatives section will assess these buildings and assign them the rankings using industry standard appropriate tools. These tools will act as a benchmark comparing similar buildings and similar end uses on an energy intensity basis. This will also assist the City with energy education and awareness for staff. Building labelling will also assist in targeting the opportunities for improvement and acknowledging high performing areas.

6.0 SPECIFIC POLICIES – ENERGY PROCUREMENT

Policy Actions – Energy Procurement

The following areas will be managed by the Energy Initiatives section as indicated throughout Section 6.

6.1 Demand Response

The Energy Initiatives section will promote the utilization of City owned assets that can contribute to a reduction in electrical demand in order for the City to participate in available demand response programs. To facilitate the process, by way of this Corporate Energy policy and as stated in the Energy Commodity Policy, the Energy Initiatives section will be granted authorization to enter into such agreements on behalf of the City of Hamilton.

6.2 Peak Demand Response and Tracking

The Energy Initiatives section will undertake the daily evaluation of provincial demand, weather and temperature and price forecasts that can indicate a potential peak demand day. Such tools and information used to anticipate when peak hours are most likely to occur include time of year, time of day, the Independent Electricity Service Operator (IESO) demand forecasts and IESO real time peak market information.

During high provincial demand periods with the potential for peak demand days, which are typically associated with the highest peak prices for electricity and potential for peak setting for the IESO's Industrial Conservation Initiative (ICI) customers, the Energy Initiatives section will notify City sites via email of this potential demand period.

If site operators can reduce demand during the peak period without compromising operations and public health and safety, they shall endeavor to do so. This can include, but is not limited to:

- Lowering or adjusting operational activities to non-peak times;
- Adjusting temperature settings in buildings;
- Shutting off non-essential lighting and/or computers; and
- Lowering blinds or closing curtains to reduce heat or cooling escape.

6.3 Transportation Fuels

The Energy Initiatives section will assume the role of procuring and managing the wholesale contracts for the City's transportation fuel requirements for all City of Hamilton users. Users include Fleet, Transit, Police, Fire and EMS. Traditional fuels that are

petroleum based (diesel and gasoline) will be and continue to be managed by the Energy Initiatives section, as will any future transportation type fuels such as Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), electricity or hydrogen. These fuels will be procured according to the direction and guidelines set out in the existing Energy Commodity policy.

6.4 Utility Supply and Rate Management

The Energy Initiatives section will evaluate utility rates (electricity, natural gas, water and waste water) for the City on an ongoing basis considering evolving energy requirements, energy market regulations and supply conditions/ contacts and the City's commodity supply arrangements. The Energy Initiatives section may initiate all utility rate changes as required to manage utility supply and utility rates. This is to ensure continued supply and allow for optimization of utility metering and rates favorable to the City. The Energy Initiatives section will manage all City customer energy use data for the City's district heating, cooling, natural gas and electricity end-use customers.

6.5 Energy Contract Management

The Energy Initiatives section will manage all energy commodity, energy supply, utility rates etc., as required to maintain energy supply to the City and the City's end-use customers where the City directly supplies district energy (e.g. heating, cooling or electricity). All contracts will be managed within established City guidelines.

6.6 Renewable Energy

Although renewable and non-renewable energy both produce carbon emissions, renewable energy has a lesser to almost zero carbon emissions. compared to fossil fuels.

Policy Actions – Renewable Energy

- The City will consider, evaluate and pursue feasible renewable energy opportunities to reduce usage from traditional energy sources and to reduce emissions overall;
- The Energy Initiatives section to be included in all corporate renewable energy project evaluations prior to commitment by the City;
- The Energy Initiatives section consider acquisition of renewable energy and/or utilizing carbon credits trading as a method of meeting targets if required.

The Energy Initiatives section will work in close association with Hamilton Renewable Power Inc. (HRPI) to advance the development and growth of renewable energy for the

City of Hamilton. The Energy Initiatives section will manage existing and future operations of renewable energy sites. Existing sites include HRPI Cogeneration plants located at 900 Woodward Ave. and the Glanbrook land fill. Furthermore, a City owned biogas purification unit located at 900 Woodward Ave. processes raw methane from the waste water process, purifies it and injects the final renewable natural gas into the Enbridge distribution system.

Additional renewable energy opportunities, strategies and initiatives will be pursued through HRPI or the City as opportunities arise. These activities will reduce greenhouse gas emissions, maximize revenue generation for the City. This includes accessing incentives, participation in the assessment of alternatives and the operation and management of any installation.

Going forward and in order to meet our low emission targets it is very likely the City will need to acquire renewable energy to meet these long-term targets. However, this type of purchase should only come after all available options have been exhausted which include installing high efficiency measures first, as applicable.

Where it is found to be feasible and land and space may be available, the Energy Initiatives section supports developing renewable energy generation and where feasible, energy storage systems. Wind and Solar Energy systems may also be investigated to help offset GHG emissions from electrical energy use, especially during peak day events.

The Energy Initiatives section should be included in all corporate renewable energy project evaluations prior to commitment to ensure all legal, technical and energy related issues have been considered.

In addition, the Energy Initiatives section will evaluate any emissions reductions opportunities and/or potential for emissions/carbon credits trading in so much as they are available, economically feasible and offer verifiable options for meeting our emissions targets.

7.0 ENERGY COMMODITY POLICY

Policy Actions – Energy Commodity Policy

The following Section in its entirety outlines the policy for commodity purchasing.

7.1 PART I - POLICY STATEMENT AND INTERPRETATION

1. Purpose of Statement

In recognition of the unique position of Energy Commodities (as herein defined) energy prices are set by varying market conditions (i.e. supply and demand), fluctuating hourly, daily and seasonally. Supply challenges for these commodities and varying supply and demand have contributed to price volatility and have produced forward market price and budgetary uncertainty.

Buyers in the Ontario marketplace who wish to control commodity price risk must enter into commodity price hedging agreements, which are intended to reduce the risk of adverse price movements in a commodity. This Statement of Policies and Goals provides the framework for the purchase, sale, delivery, and storage of Energy Commodities and the consideration of price hedging by the City of Hamilton for all Energy Commodities.

2. Definitions

“City Affiliates” are those entities with which the City is not at arm’s length within the meaning of the *Income Tax Act (Canada)*.

“Contract Agent” means an external agent, contractor, consultant, or other representative hired by the City to assist with the procurement, sale, and/or delivery of Energy Commodity for the City.

“Cooperative Energy Purchasing” means coordination of City Energy Commodity purchases with Energy Commodity purchases of City Affiliates, or other organizations.

“Energy Commodities” means electricity, green power, natural gas, methane and all other petroleum based fuel products such as: diesel, bio-diesel, gasoline, fuel oil, propane and any other bulk commodity primarily used by the City for the purpose of heating and cooling of buildings and other structures, electricity generation, cogeneration, demand response programs, smart grid programs and the fuelling of City fleets, as determined by the Manager of Energy Initiatives section.

“Green Energy” means energy generated from renewable energy sources, such as certified water power, solar, biogas, biomass and wind. Other terms for Green Energy include: Green power certificates, Renewable Natural Gas, Carbon Offsets, Tradable Renewable Certificates or "Green Tags". These attributes, embodied in a certificate or through other certification, may be bought and sold either bundled or unbundled with the commodity.

3. Policy Statement

The City of Hamilton (“City”) will procure the necessary quality and quantity of Energy Commodities in an efficient, timely, and cost-effective manner, while maintaining the controls necessary for a public institution in accordance with this Energy Commodity Policy. The City will encourage the negotiation of fair Master Agreements, and agreements with Contract Agents, with respect to the purchase, sale, delivery, and storage of Energy Commodities. The City will strive to ensure that the best value is obtained, and that the financial stability of Energy Commodity suppliers meets high thresholds to ensure sustainability and reliability of supply. The City will consider commodity price hedging agreements as a means of fixing, directly or indirectly, or enabling the City to fix the price or range of prices to be paid by the City for the future delivery of some or all of a specific Energy Commodity, or the future cost to the municipality of an equivalent quantity of the Energy Commodity, where is advantageous for the City to do so.

The City will also consider opportunities for entering into agreements with utilities and other transportation and delivery supplier contracts (i.e. pipeline supply) to secure commodity supply and utility rates of specific Energy Commodities.

7.2 PART II - DESIGNATION AND DELEGATION OF RESPONSIBILITIES

1. Designated Authority - General Manager of Finance and Corporate Services

The General Manager of Finance and Corporate Services ("GMFCS") for the City of Hamilton is the designated person responsible for administrative matters pertaining to the purchase, sale, delivery, and storage of Energy Commodities, including, without limitation, determination of potential suppliers and the entering into of Master Agreements and related transactions, as well as Energy Commodity price hedging in an efficient and cost-effective manner. The GMFCS will delegate certain administrative duties and responsibilities to internal staff, particularly the Manager of Energy Initiatives, and external Contract Agents.

The General Manager of Finance and Corporate Services, or his/her authorized delegate, is authorized to enter into contracts for the purpose of engaging a Contract Agent with respect to the purchase, sale and/or delivery of Energy Commodities in accordance with Part III of this Energy Commodity Policy.

The General Manager of Finance and Corporate Services is responsible for:

a) determining what supplier(s) are appropriate for the City to engage in negotiations in order to secure Master Agreements with respect to the purchase, sale, delivery and/or storage of Energy Commodities in accordance with this Energy Commodity Policy;

b) determining when it would be advantageous for the City to engage Contract Agents in order to assist the City with respect to its Energy Commodity procurement strategy and determining which Contract Agents to engage in negotiations and/or to enter into agency or other agreements with, in accordance with this Energy Commodity Policy;

c) determining when it would be advantageous for the City, to participate in Cooperative Energy Purchasing and to coordinate such joint efforts in accordance with this Energy Commodity Policy; and

d) determining whether a particular Energy Commodity price hedging agreement is advantageous for the City based on the considerations outlined in this Energy Commodity Policy.

2. Authorized Delegate - Manager of Energy Initiatives

The Manager of Energy Initiatives will be the General Manager of Finance and Corporate Services' authorized delegate to conduct the following:

a) seek out, with or without the use of Contract Agents, potential suppliers of Energy Commodities and engage in negotiations with same with respect to the purchase,

sale, delivery and/or storage of Energy Commodities using the criteria for potential suppliers outlined in this Energy Commodity Policy, including the entering into of Master Agreements (with terms and conditions acceptable to the City Solicitor);

b) execute Energy Commodity procurement, sale, delivery, and/or storage contracts and enter into Energy Commodity transactions in accordance with this Energy Commodity Policy and on terms and conditions acceptable to the City Solicitor;

c) enter into agency agreements and/or other contracts and/or arrangements with Contract Agents and/or electric or natural gas distribution and transmission utilities or other Energy Commodity agencies and/or companies for the purpose of purchase, sale, delivery and/or storage of Energy Commodities and incentives upon approval from the General Manager of Finance and Corporate Services and on terms and conditions acceptable to the City Solicitor;

d) enter into agreements with respect to the purchase, sale, delivery, and/or storage of Energy Commodities with City Affiliates on terms acceptable to the General Manager of Finance and Corporate Services;

e) enter into district energy agreements (with terms and conditions acceptable to the City Solicitor) with third parties, including, but not limited to, school boards, Provincial agencies and other private or public institutions for electricity supply, heating or cooling (thermal energy);

f) meet with the General Manager of Finance and Corporate Services, as required, and provide written reports regarding the past performance of Energy Commodity hedging agreements, future strategies and other issues as requested, as well as information with respect to the use of Contract Agents;

g) notify the General Manager of Finance and Corporate Services, in writing, of any significant changes in the Energy Commodity hedging philosophies or policies and organization; and

h) provide periodically, not less than annually, lists of Energy Commodity hedging agreements and agreements with Contract Agents and such other information as may be requested by the General Manager of Finance and Corporate Services.

3. Use of Contract Agents

The Contract Agent will only be authorized to act within the scope of the specific authority under any executed contract with the City and shall, in accordance with such contract, provide a number of services to the City, which may include:

a) assisting the Manager of Energy Initiatives in developing a prudent energy procurement mix and specific procurement objectives and strategies;

b) monitoring, analyzing and reporting on the City's procurement performance and supporting the Manager of Energy Initiatives with respect to Energy Commodity procurement, delivery and storage related matters;

c) assisting in the selection of Energy Commodity suppliers, delivery, and/or storage agents;

d) meeting with the Manager of Energy Initiatives as required;

e) enter into contracts and/or arrangements (with terms and conditions acceptable to the City Solicitor) with electric or natural gas distribution or transmission utilities or other Energy Commodity agencies and/or companies for the purpose of purchase, sale, delivery and/or storage of Energy Commodities upon approval from the Manager of Energy Initiatives; and

f) enter into district energy agreements (with terms and conditions acceptable to the City Solicitor) with third parties, including, but not limited to, school boards, Provincial agencies, and other private or public institutions for electricity supply, heating or cooling (thermal energy) upon approval from the Manager of Energy Initiatives.

7.3 PART III - PROCUREMENT POLICIES

1. Energy Commodity Suppliers, Delivery, and/or Storage Entities

In determining what suppliers, delivery and/or storage entities are appropriate for the City to engage in negotiations in order to secure Master Agreements with respect to the purchase, sale, delivery, and/or storage of Energy Commodities, the following nonexclusive considerations **will** be taken into account:

i. past, present and projected pricing strategies;

ii. acceptability of contract terms and conditions by the City Solicitor;

iii. the past, present and prospective financial stability of any potential supplier, including the meeting of a minimum threshold of financial stability set in accordance with this Energy Commodity Policy;

iv. any conflicts of interest as between the City, City Affiliates and any supplier, delivery and/or storage entity;

v. in the opinion of the General Manager of Finance and Corporate Services, the commercial relationship between the City and/or City Affiliates and the supplier, delivery and/or storage entity has been impaired by the prior and/or current act(s) or omission(s) of such supplier or entity including but not limited to:

(a) a corporation, including an officer, director or shareholder of a corporation, or other person which has been involved in litigation with the City:

(b) any corporation that is an affiliate of or successor to, or has one or more of its officers, directors or shareholders, any person or corporation described in clause (a);

(c) the failure of the supplier, delivery and/or storage entity to pay, in full, all outstanding payments (and, where applicable, interest and costs) owing to the City by such supplier or entity, after the City has made demand for payment of same;

(d) the refusal to follow reasonable directions of the City or to cure a default under any contract with the City as and when required by the City;

(e) the supplier, delivery and/or storage entity refusing to enter into a contract with the City after the supplier's (or entity's) bid, proposal or other document provided in response to a City procurement document has been accepted by the City;

(f) the supplier, delivery and/or storage entity refusing to perform or to complete performance of a contract with the City;

(g) act(s) or omission(s) resulting in a claim by the City under a bid bond, a performance bond, a warranty bond or any other security required to be submitted by a vendor on a RFP, RFQ, RFRC, or Tender;

within the five-year period immediately preceding the date on which the supplier, delivery or storage entity enters into a contract with respect to Energy Commodities with the City;

(v.1) for the purposes of subsection (V), the prior acts or omissions of a supplier, delivery or storage entity shall also include the prior acts or omissions of: an officer, a director, a majority or controlling shareholder, or a member of the supplier (or entity) if a corporation; a partner of the supplier (or entity), if a partnership; any corporation to which the supplier (or entity) is an affiliate of or successor to, or an officer, a director or a majority or controlling shareholder of such corporation; and any person with whom that the supplier (or entity) is not at arm's length within the meaning of the Income Tax Act (Canada);

vi. in the opinion of the General Manager of Finance and Corporate Services there are reasonable grounds to believe that it would not be in the best interests of the City to enter into a contract with the supplier, delivery or storage entity, including (without limiting the generality of the foregoing):

(a) the conviction of the supplier, delivery and/or storage entity or any person or entity with whom that supplier, delivery and/or storage entity is not at arm's length within the meaning of the *Income Tax Act* (Canada) of an offence under any taxation statute in Canada;

(b) the conviction or finding of liability of that supplier, delivery and/or storage entity under the *Criminal Code* or other legislation or law, whether in Canada or elsewhere and whether of a civil, quasi-criminal or criminal nature, of moral

turpitude including but not limited to fraud, theft, extortion, threatening, influence peddling and fraudulent misrepresentation;

(c) the conviction or finding of liability of the supplier, delivery and/or storage entity under any environmental legislation, whether of Canada or elsewhere, where the circumstances of that conviction evidence a gross disregard on the part of that entity for the environmental well-being of the communities in which it carries on business;

(d) the conviction or finding of liability of the supplier, delivery and/or storage entity relating to product liability or occupational health or safety, whether of Canada or elsewhere, where the circumstances of that conviction evidence a gross disregard on the part of that entity for the health and safety of its workers or customers;

(e) the conviction or finding of liability of the supplier, delivery and/or storage entity under the financial securities legislation whether of Canada or elsewhere, where the circumstances of that conviction have, or would have, significant negative financial impact on any contract with the City.

2. Use of Energy Commodity Price Hedging Strategies/Agreements

In determining whether a particular Energy Commodity price hedging agreement is advantageous for the City, the following non-exclusive considerations **will** be taken into account:

(i) any and all Energy Commodity purchases for which commodity price hedging agreements will be appropriate;

(ii) that the financial position of the City will be enhanced in all likelihood by virtue of the use of such an agreement;

(iii) that the all-inclusive contracted price and cost to the City of the associated Energy Commodity will be lower or more stable than it would be without the agreement;

(iv) the formulation of a detailed estimate of the expected result of using such an agreement;

(v) the formulation of the financial and other risks to the municipality that would exist with the use of such an agreement and determine if such risk would be lower than the financial and other risks to the municipality that would exist without such an agreement;

(vi) using his/her best judgment and in his/her sole discretion determine that the agreement contains adequate risk control measures, for example:

1. ensuring that if either party's credit rating falls below BBB – (S&P); Baa3 (Moody's); and/or BBB (low) (DBRS), the other party may demand Adequate Assurance of Performance. "Adequate Assurance of Performance" shall mean sufficient security in the form, amount and for the term reasonably acceptable to the City, and/or, but

not limited to being able to provide an unconditional irrevocable letter of credit or prepayment;

2. providing, in the case where a supplier has no credit rating, a guarantee from the parent corporation (assuming parent corporation meets credit rating requirements in 1 above);

3. limiting credit exposure based on a degree of regulatory oversight and/or on the regulatory capital of the other party to the agreement; and

(vii) ensure ongoing monitoring with respect to the Energy Commodity price hedging agreements.

3. Contract Agents (consultants)

The Manager of Energy Initiatives **shall** seek Council approval for a specified period of time before engaging any Contract Agents for the purposes of this Energy Commodity Policy.

4. Cooperative Energy Purchasing

The Manager of Energy Initiatives section **shall** consider engaging in Cooperative Energy Purchasing when, in his/her opinion, it would be advantageous to the City to do so based on the following non-inclusive considerations:

(i) the possibility of economies of scale (i.e. better buying power);

(ii) opportunities for cost-sharing of services; and

(iii) opportunities for securing indirect financial benefits to the City.

The Manager of Energy Initiatives shall have the authority to enter into Cooperative Energy Purchasing initiatives with City Affiliates at his discretion in consultation with the General Manager of Finance and Corporate Services and the City Solicitor.

All other Cooperative Energy Purchasing initiatives shall be subject to prior Council approval.

7.4 PART IV - REPORTING REQUIREMENTS

The General Manager, Finance and Corporate Services and Treasurer, shall report to Council at least once each fiscal year with respect to any and all Energy Commodity price hedging agreements, and other Energy Commodity agreements, in place. The report shall contain, at a minimum, all requirements as set out in O. Reg. 653/05 (as it exists from time to time) and shall include:

1. A statement about the status of the Energy Commodity price hedging agreements during the period of the report, including a comparison of the expected and actual results of using the agreements;

2. A statement by the Treasurer indicating whether, in his or her opinion, all of the agreements entered during the period of the report are consistent with this Energy Commodity Policy relating to the use of financial agreements to address commodity pricing and costs;

3. An overview of any agreements with Contract Agents (including, without limitation, actual costs, services provided and frequency of use) and a statement by the Treasurer indicating whether, in his or her opinion, all of these agreements are consistent with this Energy Commodity Policy with respect to the use of Contract Agents;

4. An overview of any Cooperative Energy Purchasing initiatives and/or agreements and a statement by the Treasurer indicating whether, in his or her opinion, all of these agreements are consistent with this Energy Commodity Policy with respect to the use of Cooperative Energy Purchasing;

5. Such other information as Council may require; and

6. Such other information as the Treasurer considers appropriate to include in the report.

7.5 PART V - ROLE OF CITY COUNCIL

Council is responsible for determining, based on information provided by City staff, whether the financial implications of Energy Commodity price hedging agreements are favourable relative to alternatives, and whether the risks associated with the Energy Commodity price hedging agreements are reasonable.

In considering the report and recommendation from the General Manager, Finance and Corporate Services and Treasurer, Council is responsible for ensuring that legal and financial advice has been obtained and must consider whether the scope of the proposed Energy Commodity price hedging agreements warrants further legal or financial advice from an independent source.

Excerpt from *Municipal Act, 2001*, Ontario Regulation 653/05

Debt-Related Financial Instruments and Financial Agreements

COMMODITY PRICE HEDGING AGREEMENTS

5. (1) A municipality that has entered, or plans to enter, an agreement under Part II of the Act for the supply of a commodity required for a municipal system may enter into one or more financial agreements to minimize the cost or financial risk associated with incurring debt for the commodity. O. Reg. 653/05, s. 5 (1).

(2) The financial agreement must fix, directly or indirectly, or enable the municipality to fix the price or range of prices to be paid by the municipality for the future delivery of some or all of the commodity or the future cost to the municipality of an equivalent quantity of the commodity. O. Reg. 653/05, s. 5 (2).

(3) Subject to subsection (4), the municipality shall not sell or otherwise dispose of the financial agreement or any interest of the municipality in the agreement. O. Reg. 653/05, s. 5 (3).

(4) The municipality may sell or otherwise dispose of a financial agreement or an interest of the municipality in the agreement if, in the opinion of the treasurer of the municipality, the sale or disposition is in the best interests of the municipality and if either of the following conditions is satisfied:

(1.) The sale or disposition is part of a transaction for the sale of real property by the municipality relating to a change in the use of the property by the municipality.

(2.) The municipality has ceased to carry on any activity relating to the municipal system for which the commodity was being acquired. O. Reg. 653/05, s. 5 (4).

Statement of policies and goals re: commodity price hedging agreements

6.(1) Before a municipality passes a by-law authorizing a commodity price hedging agreement, the council of the municipality shall adopt a statement of policies and goals relating to the use of financial agreements to address commodity pricing and costs. O. Reg. 653/05, s. 6 (1).

(2) The council of the municipality shall consider the following matters when preparing the statement of policies and goals:

1. The types of projects for which commodity price hedging agreements are appropriate.

2. The fixed costs and estimated costs to the municipality resulting from the use of such agreements.

3. Whether the future price or cost to the municipality of the applicable commodities will be lower or more stable than they would be without the agreements.

4. A detailed estimate of the expected results of using such agreements.

5. The financial and other risks to the municipality that would exist with, and without, the use of such agreements.

6. Risk control measures relating to such agreements, such as,

    i. credit exposure limits based on credit ratings and on the degree of regulatory oversight and the regulatory capital of the other party to the agreement,

    ii. standard agreements, and

    iii. Ongoing monitoring with respect to the agreements. O. Reg. 653/05, s. 6 (2)

Report on commodity price hedging agreements

7. (1) If a municipality has any subsisting commodity price hedging agreements in a fiscal year, the treasurer of the municipality shall prepare and present to the municipal council once in that fiscal year, or more frequently if the council so desires, a detailed report on all of those agreements. O. Reg. 653/05, s. 7 (1).

    2. The report must contain the following information and documents:

    1. A statement about the status of the agreements during the period of the report, including a comparison of the expected and actual results of using the agreements.

    2. A statement by the treasurer indicating whether, in his or her opinion, all of the agreements entered during the period of the report are consistent with the municipality's statement of policies and goals relating to the use of financial agreements to address commodity pricing and costs.

    3. Such other information as the council may require.

    4. Such other information as the treasurer considers appropriate to include in the report. O. Reg. 653/05, s. 7 (2).

8.0 DEFINITIONS

"*ASHRAE*" means American Society of Heating, Refrigeration and Air Conditioning Engineers.

"*CUP*" (**Central Utility Plant)** is located within the downtown core of Hamilton and was constructed and became operational in 1977, in order to generate and distribute district energy to facilities in the downtown core. Electricity, chilled water and hot water are distributed to end use customers. Sites connected to the CUP for all or some of these services include FirstOntario Centre, the Central Library and Farmer's Market, FirstOntario Concert Hall, Convention Centre, Parking Garage, Ellen Fairclough Building, Art Gallery, McMaster and Hamilton City Hall.

"CDM or Energy CDM" means Energy Conservation and Demand Management

"Embodied Carbon" is the sum of all the greenhouse gas emissions (mostly carbon dioxide) resulting from the mining, harvesting, processing, manufacturing, transportation and installation of building materials.

"Energy Intensity" means equivalent kilowatt-hours (kWh) per square foot of a building. For purposes of the Energy Policy, is the process of reducing overall energy usage or consumption of a facility or facility operations using a common measure over a specific timeframe. By measuring *energy intensity* vs. straight energy consumption reductions, we are able to account for additions or deletions in the City's building stock. We can also account for building expansions, changes in the City's portfolio and correct for seasonal weather variations.

"*Facility*" shall include all **City owned** buildings and grounds e.g. parks and recreation facilities.

"*GJ*" means giga-joule

"*HVAC*" means heating, ventilation, and air-conditioning.

"*IES*" means Illuminating Engineering Society – The Lighting Authority

"*IESO*" means Independent Electricity System Operator.

"***kWh***" means kilowatt hour

"*kW*" means kilowatt

"*L*" means litres

"Life Cycle Cost Analysis" is a method of economic analysis that sums all *relevant* project costs over a *given study period* in *present-value* terms. *It is m*ost relevant when selecting among *mutually exclusive project alternatives* that provide the same functional performance but have different initial costs, OM&R costs, and/or expected lives:

- Investment-related:
- Acquisition costs
- Replacement costs

- Residual value (resale or disposal cost)
- Operating-related:
- Operation, maintenance, and repair costs
- Energy and water costs
- Contract-related costs (for financed projects)

"m3" means cubic metre

"*NECB*" means National Energy Code of Canada for Buildings

"***Net Zero***" means achieving overall, zero greenhouse gas emissions by balancing any emissions from energy use with carbon removal via a combination of reducing usage, changing to low or zero energy sources (i.e. renewable energy sources) changing agricultural and industrial processes and carbon offsetting.

"OBC" means Ontario Building Code

"OEB" means Ontario Energy Board

"Operational Carbon" is used to describe the emissions of carbon dioxide and other global warming gases during the in-use operation of a building.

"Operations" Operations is what the City "does" and how it delivers its "product" to customers or constituents. It is the core of a company's business. Example: Public Works, Water & Waste Water.

"Zero Carbon" means that all industrial sources of CO_2 have been converted to run on zero carbon emitting energy sources and that no more carbon emissions are being added to the atmosphere from any additional source to the natural carbon balance of the planet that existed before industrialization.

9.0 REFERENCES

Emissions:

Ontario Climate Change Action Plan

https://www.ontario.ca/page/climate-change-action-plan

MOE – Climate Change – Reporting on Emissions

http://www.ene.gov.on.ca/environment/en/category/climate_change/STDPROD_078899.html

GHG Protocol

http://www.ghgprotocol.org/standards/corporate-standard

Reports:

Energy Efficiency Trends in Canada

https://oee.nrcan.gc.ca/publications/statistics/trends/2016/index.cfm

Ontario's Long Term Energy Plan

https://www.ontario.ca/page/ontarios-long-term-energy-plan

The Intergovernmental Panel on Climate Change

https://www.ipcc.ch/

ICLEI – Local Governments for Sustainability

http://www.icleicanada.org/

Incentives:

SaveOnEnergy Programs

https://www.saveonenergy.ca/ Enbridge (Union Gas) conservation programs

Natural Gas Programs

https://www.uniongas.com/business/save-money-and-energy

Standards:

Energy Efficiency Equipment Purchasing:

http://www.canlii.org/en/on/laws/regu/o-reg-404-12/latest/o-reg-404-12.html

Regulations Amending the Energy Efficiency Regulations:

http://canadagazette.gc.ca/rp-pr/p1/2013/2013-10-05/pdf/g1-14740.pdf

CAFE Standards and Regulations – EPA

http://www.epa.gov/fueleconomy/regulations.htm

NRCan National Building Code Canada

http://www.nationalcodes.nrc.gc.ca/eng/nbc/

EVO – Measurement & Verification Standards

http://www.evo-world.org/index.php?lang=en

BOMA Best – Standard for Certification

http://www.bomabest.com/

LEED Certification

http://www.usgbc.org/leed/certification

The Ontario Building Code

http://www.buildingcode.online/

Organizations/Associations:

AMO – Energy Policy

https://www.amo.on.ca/Advocacy.aspx?searchtext=&searchmode=exactphrase&date=0;&issue=7;&category=0;

Energy Star (US site)

https://www.energystar.gov/

NRCan – Energy Star in Canada

http://www.nrcan.gc.ca/energy/products/energystar/12519

NRCan – Energy Efficiency

http://www.nrcan.gc.ca/energy/efficiency

BOMA Canada

http://www.bomacanada.ca/

Carbon Disclosure Project – includes link to Wealthier, Healthier Cities

https://www.cdp.net/en-US/Programmes/Pages/cdp-cities.aspx

Illuminating Engineering Society – The Light Authority (IES)

https://www.ies.org/

Design Lights Consortium (DLC)

https://www.designlights.org/

Regulated/Energy Boards:

National Energy Board (NEB)

http://www.neb-one.gc.ca/clf-nsi/index.html

Ontario Energy Board (OEB)

http://www.ontarioenergyboard.ca/OEB/Consumers

Local Utilities:

Alectra Utilities

https://alectrautilities.com/

Enbridge Gas Inc. (Union Gas)

https://www.uniongas.com/

Pipelines:

TCPL

http://www.transcanada.com/index.html

Alliance

http://www.alliancepipeline.com/Pages/default.aspx

Vector

http://www.vector-pipeline.com/vector/default.aspx

Pricing and Market information:

AECO (Niska owned) storage & pricing HUB

http://www.niskapartners.com/our-business/natural-gas-storage/aeco-hub/

Dawn Storage & pricing HUB

https://www.uniongas.com/storage-and-transportation/about-dawn

IESO (demand & market prices)

http://www.ieso.ca/Power-Data/Data-Directory

IESO (Global Adjustment)

http://www.ieso.ca/Sector-Participants/Settlements/Global-Adjustment-Class-A-Eligibility

IESO (Average HOEP)

http://www.ieso.ca/Power-Data/Price-Overview/Hourly-Ontario-Energy-Price

EAI US Energy Information Agency (NG & Storage & Fuel)

http://www.eia.gov/

Gas/Oil Trading References:

Bloomberg

http://www.bloomberg.com/energy/

CME

http://www.cmegroup.com/trading/energy/

INO

http://quotes.ino.com/exchanges/category.html?c=energy

City of Hamilton Strategy to Reduce Single-Use Plastics

Table of Contents

Executive Summary

In response to Council direction, staff have developed the following strategy to directly reduce the generation of single-use plastic products through City of Hamilton (City) operations and to provide guidance on how the generation of single-use plastics can be reduced by residents and businesses. This strategy includes why it's necessary for this policy to be implemented for Hamilton to be an environmentally responsible organization as well as information on what alternatives to single-use plastics are available and feasible. This strategy also supports the proposed federal management approach on single-use plastics released as a discussion paper on October 7, 2020.

How the City will accomplish the goal of reducing the amount of single-use plastics generated is defined in this strategy through 14 action items which fall under four Strategic Pillars.

Background

The Impact of Single-Use Plastics

The Science Assessment of Plastic Pollution (released jointly by Environment and Climate Change Canada and Health Canada on October 7, 2020), states that "Since the 1950s, the production and use of plastics has been increasing faster than that of any other material". The increased production of plastic products gave rise to single-use plastic items gaining popularity. This was because of their convenience as these items could be used once and thrown away without having to be washed for reuse. However, despite the popularity of plastics and some of their benefits, plastic products that are designed as single-use plastics (SUPs) have in most cases, negatives that outweigh their benefits. The term "single-use plastic product" was defined by the European Union in May, 2019 as "a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to the producer for refill or re-used for the same purpose for which it was conceived." Hamilton's strategy to reduce SUPs has adopted this same definition.

There are two significant problems associated with SUPs. First, the vast majority of these products are not able to be recycled due to their composition and design and therefore cannot be included in blue box programs resulting in them being landfilled. Often these products are produced in a way that combines different materials that cannot be separated to allow products to be recycled (coffee cups are mainly paper-based but also have a thin plastic liner), are so small and light that they cannot be captured through current separation technologies or, are of such low quality of plastic that there is no end market for them (polystyrene take-out containers contaminated with food), or any combination of these.

The second significant problem with single-use plastics is that when they are littered, they result in negative impacts on the environment. The Province's discussion paper on "Reducing Litter and Waste in Our Communities" (2019) states that almost 10,000

tonnes of plastic debris ends up in the Great Lakes each year and more than 80% of litter collected during volunteer clean ups along Great Lakes' shorelines is plastic. Included in the federal "Strategy on Zero Plastic Waste" (2018) are the devastating impacts of SUPs littered in the environment as they pollute waterways, harm wildlife and damage habitat and fisheries.

Because of the negative impacts related to SUPs, these products have received increasing media attention in recent years, prompting individuals, businesses and legislators to begin looking for ways to reduce or eliminate them as much as possible.

Council Motion

In May 2019, in acknowledgement of the environmental impacts of plastic pollution, restrictions on what the City can accept in the blue box program, low waste diversion rates, actions by other municipalities along with other contributing factors, City Council directed staff to report back to the Public Works Committee with information on the feasibility of the City creating a Zero Plastic Waste Plan. Council direction for the plan was:

- That it quantifies SUPs that never were or are no longer acceptable in the blue box program
- That it identifies reusable or compostable alternatives to single-use plastics
- That it includes regulatory options for the City to reduce or eliminate single-use plastics
- It includes any costs or savings to implementing a plan

In addition to the items listed above, this strategy includes a list of actions for the City to either investigate and/or implement to reduce the amount of SUPs generated through City operations.

Single-Use Plastics and Alternatives

There are many examples of SUPs that are used in Hamilton and examples of the most common SUPs can be found in Table 1 along with their status as it pertains to Hamilton's blue box program. The majority of SUPs are not recyclable and need to be disposed of in the garbage in Hamilton and other jurisdictions. There are three items listed in Table 1 that were previously accepted in Hamilton's blue box program but no longer are due to reduced end markets for these products and/or contamination issues associated with them.

Table 1: Status of Common SUPs in Hamilton's Blue Box Program

Single-Use Plastic Product	Currently Accepted in Hamilton's Blue Box Program?	Previously Accepted in Hamilton's Blue Box Program?
Beverage bottles	Yes	Yes
Beverage bottle lids	No	Yes
Coffee cups	No – accepted in green bin	No
Coffee cup lids	No	Yes
Coffee pods	No	No
Plastics cups and plates	Yes	Yes
Plastic straws	No	No
Plastic takeout trays	Yes	Yes
Plastic utensils	No	No
Polystyrene takeout trays, plates & cups	No	Yes

All the products listed in table 1, other than plastic and polystyrene takeout trays, have reusable alternatives available to the public. Reusable coffee pods and mugs, straws, water bottles, plates and utensils are commonly sold and some in convenient travel options. However, due to the convenience of disposable SUPs, they are still more popular than the reusable options. In response to the impact SUPs are having on the environment, and to maintain the convenience of throwaway options, compostable alternatives to SUPs are increasing in popularity and availability. Compostable single-use products are marketed as having a decreased environmental impact by having the ability to biodegrade in the natural environment. Figure 1 includes examples of some popular alternatives. Although these products are marketed as having reduced environmental impacts, associated negatives of pressed paper and PLA products include that they don't biodegrade the same as products currently accepted in Hamilton's green bin program (such as food waste and paper towels). Pressed paper and PLA based plastics take considerably longer to decompose, even in ideal environments produced in commercial compost facilities. Other issues with this type of material include utilizing agricultural space to produce plastics versus food and that its similarity to petrol-based plastics can result in contamination of the recycling process as it can be easily confused with traditional plastics.

	
Fibre-based products – these are paper-based (pressed or non-pressed paper) or made from unprocessed fibre material such as bamboo	Bioplastics – these include polylactic acid (PLA) which is a vegetable based plastic material very similar to petrol-based plastics usually made of corn starch, tapioca root or sugarcane

Figure 1: Examples of available Compostable Products

These alternative products are often branded with a compostable certification. Compostable certifications, such as BPI (Biodegradable Products Institute), rely on test methods that are generally not consistent with the process of municipal compost facilities. To be certified as compostable, a product must break down significantly in 84 days and this is usually done in a lab environment under ideal conditions. Currently, there are no provincial standards in Ontario for what can be branded as compostable in a retail setting.

Testing of Single-Use Plastics Alternatives

City staff conducted tests at Hamilton's Central Composting Facility (CCF) to determine whether products certified or marketed as compostable alternatives to SUPs can be processed fully. To date, staff have completed two separate tests following the Compost Council of Canada protocol; the first from August to September 2019 and the second from January to February 2020. The same products were included in each test and included bamboo alternatives (such as spoons and bowls), PLA cups and classic white paper plates. A total of 19 alternative products were tested. During the test, 74% (14) of the products tested were removed during the screening process and all products removed during the screening process ended up in landfill. Even though five products were not screened out, due to their small size (such as PLAs) they were designated as problematic by City staff because these products have the potential to contaminate the compost and put it at risk of not passing quality testing because they break down into what could be considered foreign matter/sharps. The current limit of this material in compost is 0.5% based on Ontario compost standards.

Table 2: Results of Product Testing

Product	Accepted in Green Bin?	Screened Out?	Problematic or Non-Problematic
Bamboo Bandage	No	No	Problematic
Bamboo Bowls	Yes	Yes	No
Bamboo Skewers (Type 1)	Yes	Yes	No
Bamboo Skewers (Type 2)	Yes	Yes	No
Bamboo Spoons	Yes	Yes	No
Chopsticks	Yes	Yes	No
Compostable Coffee Pod	No	No	Problematic
Compostable Food Wrap	No	No	Problematic
Coral Forks	No	No	Problematic
Fiber-Based Cutlery	Yes	Yes	No
Paper Clamshell Take Out Container	Yes	Yes	No
Paper Cup	No	Yes	Problematic
Paper French Fry Boat	Yes	Yes	No
Paper Plates	Yes	Yes	No
Paper Straws	Yes	Yes	No
Paper Water Cooler Cup	Yes	Yes	No
PLA Cups	No	Yes	Problematic
PLA Straws	No	No	Problematic
Plant Based Bag	Yes	Yes	Problematic

Although the products removed during screening ended up in landfill, some of this material could be reintroduced to the compost process. The products that could be reintroduced into the process are categorized as non-problematic because when they are included in phases one and two, they can provide some benefit to the compost by increasing carbon levels, transferring bacteria and adding structure to the composting mass. Examples of these products include bamboo spoons and bowls and paper straws. The case for these materials not being problematic is strengthened by the fact that they will not contribute to contamination of the compost if they do make their way through the screening process.

The test results at the CCF concluded that plant-based plastics cannot be composted in Hamilton and other compostable products that are alternatives to SUPs will benefit the composting process but will eventually end up in landfill. The results also confirmed that the benefits of most products marketed and/or labelled as compostable alternatives

to SUPs are limited. These single-use products come with additional negatives and are in most cases detrimental to the composting process used by the City. These results are consistent with sorting direction from other municipalities as Toronto, Peel Region, Halton Region and Waterloo Region (to name a few) do not allow for compostable items such as cutlery to be placed in their green bin programs. Any alternatives to SUPs that are recommended through this strategy will be deemed at minimum, to be non-problematic to Hamilton's CCF's composting process.

Federal Discussion Paper on Management Approach

On October 7, 2020, the federal government released the discussion paper "A proposed integrated management approach to plastic products to prevent waste and pollution" which builds on previous actions of the federal government on SUPs including signing the Oceans Plastics Charter (June, 2018), developing the Canada-Wide Strategy on Zero Plastic Waste (Phase 2 released in July, 2020) and the Science Assessment of Plastic Pollution (October, 2020). This discussion paper outlines the approach the federal government is proposing to take to support the reduction of SUPs. This approach includes the following objectives: eliminating certain sources of plastic pollution; strengthening domestic end-markets for recycled plastics; improving the value recovery of plastic products and packaging; and, supporting innovation and the scaling up of new technologies. There are three tools proposed in the discussion paper to accomplish these objectives:

- Bans and/or restrictions on certain SUPs
- Performance standards to reduce or eliminate environmental impact and stimulate demand for recycled plastics
- End-of-life responsibility of SUPs through extended producer responsibility

These tools will be formalized in regulations planned to be in effect by the end of 2021. Along with naming the tools above, the discussion paper includes high-level details of what will be included under each. For the Federal ban, this includes naming six items proposed to be included and the criteria for how these items were selected. The proposed items are listed in table 3.

Table 3: Federal SUP Ban

Items Proposed in the Federal SUP Ban
• Grocery/take-out bags
• Plastic straws
• Plastic stir sticks
• Plastic cutlery
• Beverage six-pack rings
• Food packaging and service ware made from plastic that is difficult to recycle (including foamed plastics, black plastic, PCC, oxo-degradable plastic and multiple/composite materials that have one or more plastics)

Performance standards include determining a minimum percentage of recycled content for plastic products (possibly by sector, material or resin type), establishing rules for measuring and reporting on the recycled content in materials and developing technical guidelines to formalize standards that need to be followed when meeting performance standards. End-of-life responsibility includes increasing collection and recycling rates, minimizing material sent to landfills and establishing conditions for innovation to create a circular economy for plastics.

Hamilton's Strategy to Reduce Single-Use Plastics

Objectives

The primary objective of Hamilton's Strategy to Reduce Single-Use Plastics (SUPs) is to decrease the use and disposal of SUPs within City operations and on City property. This will be achieved by cultivating a shift in the behavior of City staff, residents, businesses and event organizers through an approved list of action items. This strategy will prioritize the first two Rs in the 3Rs hierarchy; reduction and reuse for example reusable water bottles and coffee mugs; before providing appropriate compostable alternatives to SUPs and actions that promote recycling of SUPs.

The second objective of the strategy will be to provide promotion and education materials to businesses and residents to encourage a switch to reusable alternatives. Care has been given in drafting this strategy to ensure no duplication with the proposed actions in the federal government's discussion paper. An example of this is the omission of any action on the SUPs proposed to be included in a federal ban as seen in Table 2 above.

Scope

Council's original direction in the motion from 2019 was "That staff report back to the Public Works Committee with information on the feasibility of the City creating a Zero Plastic Waste Plan". After investigation and consultation with Legal Services, staff have determined that although a "Zero Plastic Waste Plan" may not be feasible at the Municipal level, a strategy to reduce SUPs is. The scope of this strategy focuses on how City operations can reduce the generation of SUPs while providing guidance to how local businesses and residents can reduce their dependence on these products without creating actual requirements. There are several reasons for these limitations in scope. First, Legal Services was consulted on the implications of implementing a City-wide ban on SUPs and concerns raised included whether a plastic ban is within the jurisdiction of a municipality. A City-implemented ban would require approval from Ontario's Ministry of Environment, Conservation and Parks. Enacting a City-wide ban would also require stakeholder consultation and if passed, will almost surely be challenged, requiring legal resources to defend the City's position. Because of the jurisdictional limitations, the strategy will focus on promoting voluntary reduction efforts to help reduce SUPs generated by residents and at businesses in the City.

The second reason for why an outright ban on SUPs across the City is out of scope is the pending regulations described in the federal discussion paper. Any bans included in federal regulations would over rule those implemented by the City.

This strategy defines work that staff will be carried out to reduce the amount of SUPs that the City generates. This work includes 14 action items under four Strategic Pillars as seen in Table 4 and described in detail below.

Table 4: Strategic Pillars and Action Items

Strategic Pillar	Action Items
1. Promotion and Education	• Use current education tools such as the annual waste guide to educate on reducing SUPs • Expand education efforts on SUPs to include in-person activities and virtual tools • Create educational material for businesses on reducing SUPs
2. City Infrastructure	• Replace drinking fountains in City parks with stations that permit the filling of water bottles • Investigate installing outdoor water fill stations at City-owned golf courses • Continue to install water fill stations in arenas, municipal service centres and other City buildings
3. Bans on SUPs in City Facilities	• Update Public Health policies to require compostable single-use items over SUPs • Investigate feasibility of requiring all events receiving City waste services to have water fill stations and banning the sale of water bottles • Require operators of concession stands, cafes etc. on City property to use City-approved compostable alternatives to SUPs • Develop a policy to ban single-use coffee cups and water bottles at organized events in City buildings • Require office kitchenettes to be supplied with reusable glassware • Investigate banning the sale of water bottles in facilities with water fill stations

4. Financial Incentives and Fees	• Determine best approach to reducing the sale of single-use coffee cups at City facilities (fees or incentives) and implement • Investigate enforcement options for operators that do not comply with fees and incentives

Strategic Pillar 1 – Promotion and Education

Actions

1. The reduction of SUPs will continue to be promoted in annual recycling and waste guides and will be expanded to include the City's website. This messaging was first included in the 2020/2021 Waste Guide; however, there will be an increased focus on the reduction of SUPs in future waste guides. The City's website will also include a page dedicated to promoting the reduction of SUPs. This action item will attempt to make Hamilton residents more aware of the problems surrounding SUPs, why they should attempt to reduce their use of them and how to achieve this. This action item will also take advantage of an existing, familiar medium to communicate these messages and removing additional costs to the City in the process.
2. Education efforts will be expanded to include promoting the reduction of SUPs at community events and other engagement opportunities. Community Outreach staff currently share tips for reducing SUPs with grade school classes who tour the education room at the CCF. Much like action item 1 under this Strategic Pillar, this action utilizes existing programming to provide awareness to remove additional costs to the City. If moving forward, education takes place with virtual tools such as educational videos, then these will be updated to include information on replacing SUPs with reusable or compostable options based on readily available options and their compatibility with the process at the CCF.
3. Produce informational material to help businesses reduce SUPs. This action will include providing guidance to restaurants and food trucks on reducing the generation of certain SUPs including single-use coffee cups and/or single-use water bottles. This could provide information on the most effective methods to reduce single-use coffee cups through incentives or fees and allowing patrons to have reusable water bottles filled.

Strategic Pillar 2 – City Infrastructure

Actions

1. Parks and Cemeteries will continue to replace aged water fountains with multi-functional water stations with the ability to fill reusable water bottles. City parks are well used by the community, including the use for public events and sports tournaments. Providing visitors to parks with the ability to fill reusable water bottles will encourage the use of reusable water bottles and reduce the use of single-use plastic water bottles.

2. Investigate the feasibility of installing a water bottle fill station(s) at City's Municipal Golf Courses. If these were installed, City staff would promote the water bottle fill stations to patrons through signage and its website. Providing user of golf courses and recreational facilities with an easily accessible way to fill their water bottles has the potential to reduce the amount of single-use water bottles disposed of at these locations. In 2019, a total of 1,630 water bottles were sold at Kings Forest Gold Course between the lounge and beverage carts. The cost of installing outdoor water bottle fill stations is between $25,000 and $30,000, with potential additional costs depending on the distance from existing water lines. In addition to this capital cost, there is also an annual operating cost of approximately $5,000 for opening and closing the fill station and any other associated operating costs such as maintenance, graffiti and water. If any of these water-fill stations are installed the capital costs will be covered through funds in existing budgets.
3. Continue to install water bottle fill stations in arenas, Municipal Service Centres and other City buildings. These water bottle fill stations have already been installed in numerous City buildings. This action will evaluate moving forward with this throughout all locations/buildings included in the scope if they don't already have these stations installed (included as Appendix "A").

Strategic Pillar 3 – Single-use Plastic Bans in City Facilities and on City Property Actions

Although the federal government is proposing a list of SUPs to include in a ban, this strategy is proposing to ban SUPs that are not currently being contemplated for inclusion in the federal plan but are still considered problematic. The items that will be included in the ban for City operations are: hot and cold beverage cups and lids (most notably single-use coffee cups) and single-use water bottles.

1. Update Public Health "Requirements for Food Vendors at Special Events" to indicate that compostable single-use products are required over plastic where possible, and to provide a list of acceptable compostable single-use products until such time that a federal ban is enacted. Public Health requirements for food vendors at special events currently include that "Only disposable eating utensils (examples: plastic knives, forks, spoons, paper plates and cups) shall be provided to customers." This can be updated to include that these disposable utensils must be of a type approved by the City.
2. To support enforcement through action item 2 under Strategic Pillar 3, investigate the requirement for all events on City property requesting waste diversion services from the City to provide water fill stations to patrons and require that no vendor at the event sells single-use water bottles to patrons. This investigation will include coordination with the Special Events Advisory Team and through the application process to hold events on City property.
3. Require that operators of all concession stands, cafeterias, cafes/coffee shops etc. on City property included in Appendix "A", be required to use compostable alternatives to SUPs approved by the City where reusable options, or elimination of

products is not possible. If the federal government establishes a standard for how "compostable" is defined, then this standard will replace any standard established by the City.

5. Develop a policy to ban the use of single-use coffee cups and water bottles at staff organized meetings and other gatherings on City property (including staff meetings and Advisory Committee meetings). Encourage outside staff or other visitors to bring reusable mugs if coffee is being provided.
6. Require offices that have kitchenette infrastructure to be supplied with reusable glassware and water jugs for meetings that include outside staff.
7. Investigate the ban of single-use water bottles at all City facilities that are equipped with water fill stations.

Strategic Pillar 4 – Financial Incentives and Fees

Actions

1. Investigate different incentives, either fees or savings, to promote the use of reusable alternatives to single-use coffee cups at concession stands, cafes etc. located within City buildings. This will include staff investigating what approach and dollar figure is most effective in changing the behaviour of residents/patrons resulting in an increased use of reusable items. Potential approaches include either a fee for using a single-use coffee cup or an incentive for bringing a reusable coffee mug. This investigation will most likely include piloting the potential approaches at selected City-owned or operated buildings and is necessary as the most difficult aspect of implementing a fee or incentive is determining what an appropriate dollar figure is. The value cannot be so low that it is considered insignificant but cannot be so high that it is considered unreasonable. The most effective way to determine an appropriate cost is to test different values. Once action item 1 under this Strategic Pillar is complete, implementation of incentives or fees will proceed at 26 City buildings and facilities (listed in Appendix "A") and will include municipal service centres, arenas and community centres, parks, operational facilities, golf courses and one senior centre, but will not include contracted out, volunteer-run or seasonal concession stands. Additionally, the most appropriate method will also be implemented by vendors at events on City property.
2. Investigate enforcement mechanisms for operators and vendors at special events that do not provide the incentive or apply the fee when patrons use single-use hot/cold beverage cups at events or fail to provide event patrons with the ability to fill reusable water bottles through water fill stations. This action includes requiring events to either be held in parks equipped with water fill stations or for the organizer to secure a mobile water fill station approved by the City or both. This may include investigating what water fill options are necessary based on the size of the event being held.

Evaluation of the Strategy

Evaluating this strategy on an ongoing basis will be key in ensuring it meets its objectives and ultimately the strategy being successful. This evaluation will be carried out through waste audits, monitoring the sale of SUPs at City facilities and reporting on the progress of the strategy through different methods such as the Waste Management Advisory Committee and through the annual Clean and Green report.

Sales and Inventory Monitoring

Staff will monitor the procurement of SUPs targeted by the action items identified in this strategy to determine if there is any change in the demand and use of these materials.

Corporate Strategic Alignment

City of Hamilton Corporate Climate Change Strategy – This strategy supports Goals 1 and 5 of the City's Corporate Climate Change Strategy. Replacing outdated water fountains in City parks supports the action item to retrofit existing corporately owned assets to improve energy efficiency and reduce GHG emissions. While the water fountains themselves may not directly reduce GHG emissions, the reduced reliance on disposable water bottles will.

Clean and Green Strategy – The City's Clean & Green Hamilton Strategy encourages behaviour that supports a clean and green community. It provides context and guidance for the development of policies, programs and initiatives that promote and enhance cleanliness, aesthetics and environmental stewardship across Hamilton. This strategy demonstrates commitment to the purpose of the Clean & Green Strategy.

Public Opinion/Alignment with SWMMP

In support of updating its Solid Waste Management Master Plan, the City undertook a public opinion survey on waste from January 6 to February 7, 2020. One of the open-ended questions included in the survey was "Should the City explore options for reducing single-use items (i.e. plastic bags, plastic straws, plastic cutlery, plastic take-out containers and single use cups)?". Of the 3,923 responses to this question, 3,343 (85.2%) of respondents answered that they do believe that the City should explore options to reduce single-use plastics.

Conclusion

The 14 action items included in "The City of Hamilton's Strategy to Reduce to Single-Use Plastics" establish a clear path forward for how the City can potentially reduce the generation of single-use plastics while maintaining consistency with other City policies and not conflicting with the federal management approach proposed in the discussion paper. This strategy emphasizes the importance of reduction and reuse options prior to considering compostable alternatives, as these products can be problematic to Hamilton's processing system at the Central Composting Facility. In lieu of potentially pending bans on single-use plastics by the federal and provincial governments, this strategy maintains in its scope what the City can do within its own operations and providing appropriate guidance to businesses and residents.

City of Hamilton Buildings

Building Name	Type of City Operation	Type of SUP Generator
1. City Hall	Municipal service centre	Coffee shop
2. Lister Block	Municipal service centre	Coffee shop
3. Beverly Community Centre & Arena	Arena	Recreation-run concession stand
4. Carlisle Community Centre & Arena	Arena	Recreation-run concession stand
5. Chedoke Twin Pad Arena	Arena	Recreation-run concession stand
6. Dundas J.L. Grightmire Arena	Arena	Recreation-run concession stand
7. Glanbrook Arena and Auditorium	Arena	Recreation-run concession stand
8. Inch Park Arena	Arena	Recreation-run concession stand
9. Bill Friday Lawfield Arena	Arena	Recreation-run concession stand
10. Morgan Firestone Arena	Arena	Recreation-run concession stand
11. Dave Andreychuk Mountain Arena and Skating Center	Arena	Recreation-run concession stand
12. Pat Quinn Parkdale Arena	Arena	Recreation-run concession stand
13. Rosedale Arena	Arena	Recreation-run concession stand
14. Saltfleet Arena	Arena	Recreation-run concession stand
15. Stoney Creek Arena	Arena	Recreation-run concession stand
16. Valley Park Arena	Arena	Recreation-run concession stand
17. Harry Howell Arena	Arena	Recreation-run concession stand
18. Chedoke Golf Course	Golf course	Food service, restaurant & concession stand
19. King’s Forest Golf Course	Golf course	Food service, restaurant & concession stand
20. Millgrove Community Park Concession	Park	Recreation-run concession stand
21. Dundas Driving Park	Park	Recreation-run concession stand
22. Joe Sam’s Leisure Park	Park	Recreation-run concession stand

23. Bayfront Park Concession	Park	Recreation-run concession stand
24. Sackville Hill Seniors Centre	Seniors Center	Cafeteria
25. Wentworth Street Operations Center	City Operational Facility	Cafeteria
26. Mountain Transit Centre	City Operational Facility	Cafeteria