TOWN OF HALTON HILLS
Working Together Working for You!

PLANNING, PUBLIC WORKS AND TRANSPORTATION COMMITTEE AGENDA

Meeting #: PPT-2019-0012

Date: Tuesday, October 8, 2019, 3:00 p.m.

Location: Halton Hills Town Hall, Council Chambers
1 Halton Hills Drive

Members: **Mayor R. Bonnette, (Ex-Officio), Councillor C.Somerville, Chair, Councillor J. Fogal, Councillor M. Albano, Councillor B. Lewis, Councillor M. Johnson, Councillor B. Inglis**

Pages

1. CALL TO ORDER

2. DISCLOSURE OF PECUNIARY INTEREST

3. COMMITTEE DELEGATIONS/PRESENTATIONS

   a. **Terry Martins, Consultant from G.M. Blue Plan Engineering (Opening Remarks by Chris Mills, Commissioner of Transportation and Public Works)**

   Presentation to Committee regarding Corporate Fleet Management Strategy.

   (PowerPoint)

   (Refer to Item No. 4.a of the agenda, Report No. TPW-2019-0020)

   b. **Melissa Ricci, Senior Planner - Policy (Opening Remarks by John Linhardt, Commissioner of Planning and Sustainability)**

   Presentation to Committee regarding Terms of Reference Glen Williams Scoped Secondary Plan Review.

   (PowerPoint)

   (Refer to Item No. 4.b of the agenda, Report No. PLS-2019-0043)

c. **Ian Jarvis, President and Gillian Henderson, Vice President of Enerlife Consulting (Opening Remarks by Michael Dean, Senior Sustainability Planner and Energy Coordinator)**

Presentation to Committee regarding the 2019 Corporate Energy Plan Update Final Draft.

(PowerPoint)

(Refer to Item No. 4.c of the agenda, Report No. PLS-2019-0067)

4. REPORTS & MEMORANDUMS FROM OFFICIALS

Vet Reports to be considered by the Planning, Public Works and Transportation Committee.

Reports will be automatically held when there is a presentation or delegation on the matter.

5. CLOSED SESSION

a. REPORT NO. PLS-2019-0070

PLANNING AND SUSTAINABILITY REPORT NO. PLS-2019-0070 dated September 24, 2019 regarding litigation or potential litigation, including matters before administrative tribunals, affecting the local municipality or local board. (OMB Appeal Update)

6. RECONVENE INTO OPEN SESSION

Motion to approve items pertaining to Closed Session.

7. ADJOURNMENT

TOWN OF HALTON HILLS
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REPORT

REPORT TO: Chair and Members of Planning, Public Works and Transportation Committee

REPORT FROM: Matthew Lynch, Fleet Supervisor

DATE: September 25, 2019

REPORT NO.: TPW-2019-0020

RE: Corporate Fleet Management Strategy

RECOMMENDATION:

THAT Report No. INF-2019-0020, dated September 25 2019, regarding the Corporate Fleet Management Strategy, be received; and

AND FURTHER THAT the Council adopt the Corporate Fleet Management Strategy submitted by G.M. Blue Plan dated May 24, 2019.

AND FURTHER THAT the full project costs of the Implementation Plan be referred to Budget Committee.

BACKGROUND:

The Town owns, operates and maintains a fleet of approximately 240 vehicles and equipment. Of these, 200 units are operated by public works and parks, 32 are assigned to the Halton Hills Fire Department, 8 are assigned to Halton Hills Activan Transit which currently specializes in paratrans services and 3 are assigned to facilities. The estimated replacement value is for the entire fleet is approximately $23M.

Currently, municipal vehicles are being managed by different business units or service areas. However, the majority of the Town fleet operates as a division of Public Works with the primary responsibility being the procurement and maintenance of public works, parks and Activan Transit vehicles. The program is managed by a Public Works Supervisor with a Senior Mechanic and three additional mechanics. All four mechanics are unionized and possess the 310S and 310T certifications. The Public Works Supervisor position is responsible for the development of specifications used in the tendering process as well as tasked with managing the vehicle replacement program and new capital purchases funded through development charges. The vehicle replacement program is primarily based on preexisting lifecycles; however the need for

additional vehicles for expanding operations has pushed various units beyond their anticipated lifecycles.

Generally, for public works, parks and transit vehicles, operating budgets for each of the units are funded through an hourly charge out rate; where the equipment is charged to various projects/cost centers according to usage. The charge out rate is based on anticipated mechanics labour, parts, tires, fuel, insurance, licensing, overhead as well as funding the replacement vehicle. However, this approach to establishing a sustainable operating budget as well as funding the replacement vehicle has not been adopted by all departments.

Vehicle maintenance for Fire Services and Recreation is generally the responsibility of the service group, either through outsourcing or internal staff. There is also a service agreement in place where Halton Hills Hydro maintenance staff service and provide annual certification of fire vehicles.

In 2019, the Town engaged the services of G.M. Blue Plan to complete a Corporate Fleet Management Strategy (CFMS). The strategy (Attachment A) is intended to streamline and standardize current fleet management practices across all service areas as well as recommend an implementation strategy to create a more efficient and cohesive Town wide fleet management approach. The strategy is also intended to explore the option of initiating a single Corporate Governance Model for the management of all municipal fleets.

It is understood that there are additional fleets owned by Halton Hills Community Energy Corporation. Although, a representative from HHCEC was involved in the RFP process and included as part of the steering committee, the contents of the strategy presented do not directly apply to HHCEC. HHCEC is recognized as a separate organization from the Corporation of the Town of Halton Hills, and therefore, is governed by a separate set of organizational objectives. Recommendations within the strategy are based on industry best practices. Therefore, HHCEC may be able apply some of the recommendations to its own fleet management business processes.

COMMENTS:

Strategy Objectives

The overall goal of the Corporate Fleet Management Strategy (CFMS) is to deliver fleet management services in a manner that aligns with the Town's strategic objectives. It builds upon current resources to work toward an approach where data-driven service levels are used to eliminate redundancies and bring efficiencies to the asset management of a growing fleet portfolio.

The CFMS strives to achieve the following goals:

- Streamline and standardize current fleet management practices within the Town;
- Ensure that current resources are leveraged, including training and coverage, to provide maximum value;

- Ensure that service levels are clearly defined and can be measured and managed;
- Create a more efficient and cohesive Town-wide fleet management strategy and approach;
- Support the Town through anticipated growth and demands to optimize spending;
- Support the addition of possible future fleet areas of business; and,
- Position the Town to leverage enhancements in technology to better manage fleet assets moving forward.

Strategy Recommendations

The CFMS provides eleven (11) recommendations that will enhance the current practices in place in Halton Hills. These recommendations are grouped into four business processes which include Procurement, Operations, Maintenance and Disposal/Replacement. The Town is currently engaged in several activities that support "best practices" in fleet management. However, advancing the recommendations below is critical to achieving the goals and objectives of the CFMS.

Procurement

- Recommendation #1:
  Centralize fleet procurement under a single group that engages with subject matter experts from each fleet user group to inform the development of vehicle specifications and other technical elements of the procurement document.

- Recommendation #2:
  Leverage data to inform the procurement process.

- Recommendation #3:
  Develop an enhanced fleet procurement approach that can enable lowest lifecycle cost, standardization and the Town's strategic objectives to be considered in the process.

- Recommendation #4:
  Develop Service Level Agreements (SLAs), as required, to bring clarity as to the roles and responsibilities of the entity providing the service that are aligned with the entity receiving the service.

Operations

- Recommendation #5:
  Implement a Fleet Management software system that tracks operational considerations.

- Recommendation #6:
  Leverage data to inform a charge out rate for all fleet assets.

- Recommendation #7:

Connect environmental considerations to Operational Strategies.

Maintenance

- Recommendation #8:
  Implement a Fleet Management software system that optimizes and tracks maintenance activities.
- Recommendation #9:
  Measure and manage appropriate fleet maintenance metrics.

- Recommendation #10:
  Centralize maintenance management activities, data and processes.

Disposal/Replacement

- Recommendation #11:
  Implement an Optimum Service Life approach to disposing vehicles.

Organizational Strategy

Under the Towns current organizational structure, many of the core recommendations identified within the CFMS can be implemented. The responsibility of corporate fleet management, as recommended, will continue to function as a section within the division of Public Works. This section will continue to operate under the authority of a dedicated Fleet Supervisor which was recently added to the Public Works complement. However, as the municipal fleet grows and major components are added, the organizational structure will need to be reviewed to ensure continued support and enhancement of the Towns corporate fleet management program and asset management processes.

The current Fleet Supervisor position will be responsible for building an annual plan to advance the recommendations of the CFMS in a prioritized manner. This commitment to the CFMS is important to ensuring that concepts become engrained into the day-to-day fleet management activities in the Town.

Implementation Strategy

The CFMS includes a detailed long range implementation plan. However, there are various activities identified that can be implemented in the short-term and medium term that have zero to minimal budget impacts.

Activities included in the plan consist of both finite projects, intended to build a core or foundational component of the Town's AM System; and activities that will result in the implementation of an ongoing business process. As such, these activities should be integrated into the Town's asset management business processes required to ensure the continual operation of the Town's AM System.

Short-Term/High Priority/Minimal or No Cost – Immediate

- Review business processes to centralize fleet management with the intent of streamlining and standardizing fleet operations

- Develop fleet asset inventories and provide framework for asset data collection while standardizing inventory
- Initiate digitization of corporate fleet data utilizing formats that can be incorporated into the Towns asset management processes and future maintenance management systems.

Medium-Term/Medium Priority/Minimal or No Cost – 1 to 2 years

- Implement Advanced Procurement Strategies including operator and management feedback forms with procurement scoring methodology/matrix
- Implement Advanced Environmental Strategies including operator training, monitor and report on fuel usage

Computerized Maintenance Management System

The implementation of a Computerized Maintenance Management System (CMMS), or work order system, has been identified as one of most essential recommendations in the strategy. Currently, all vehicle maintenance is recorded via hand written work orders and financial data is limited to reports produced by the Towns financial program FMW. Under current processes, the true lifecycle costs of a fleet asset cannot be easily extrapolated. Therefore, the ability to collect and analyze fleet operations data will be imperative to the Town's asset management system.

The implementation of a CMMS will also provide the Town clear evidence to establish vehicle charge out rates by understanding the number of hours each asset is being used, fuel consumption, hours/kilometers in service, etc. This data can be further analyzed to understand variations over time (i.e. trending over months/years) or by weather conditions (i.e. lights vs heavy winter, dry vs wet summer, etc.).

The implementation plan specifies that the CMMS as a high priority/immediate action with a cost ranging from $125,000 to $175,000. However, work is currently being completed in coordination with Asset Management and Information Services to include a CMMS/work order system as part of the implementation of the Town's Asset Management System in 2020. It is anticipated that fleet staff will be included in the RFP and selection process for the AM System to ensure needs are met for a fleet focused add-on and funding requirements are outlined for the 2021 Capital Budget.

Initial steps towards implementing an asset management tool will be the use of the Decision Support System (DSS) that will be provided by G.M. Blue Plan. The tool can be used to develop a long range financial plan while supporting asset management decisions; versus establishing budgets based on a linear expected life cycle for each asset.

RELATIONSHIP TO STRATEGIC PLAN:

Under the strategic priority for Infrastructure (Old and New), this report is relevant to achieving priority G- Provide Sustainable Infrastructure and Services.

G.1 To provide infrastructure and services that meets the needs of our community in an efficient, effective and environmentally sustainable manner.

FINANCIAL IMPACT:

The financial impacts of the strategy have been outlined within the Implementation Plan of the CFMS.

CONSULTATION:

The CFMS was developed by a steering committee consisting of Town staff lead by consultations with G.M. Blue Plan. The committee consisted of:

- Dick Spear, Superintendent of Public Works
- Bruce Morrison, Deputy Fire Chief
- Dharmen Dhaliah, Corporate Asset Manager
- Matthew Lynch, Fleet Supervisor
- Don Matthews, Manager of Operations (HHCEC)

The Corporate Fleet Management Strategy has also been reviewed internally by Town staff. The recommendations identified in the strategy are supported by both Purchasing and Finance and have been aligned with the Towns financial plan.

PUBLIC ENGAGEMENT:

There is no public engagement required at this time.

SUSTAINABILITY IMPLICATIONS:

The Town is committed to implementing our Community Sustainability Strategy, Imagine Halton Hills. Doing so will lead to a higher quality of life.

The recommendation outlined in this report is not applicable to the Strategy's implementation.

COMMUNICATIONS:

There are no communications required at this time.

CONCLUSION:

The Corporate Fleet Management Strategy (CFMS) delivered by G.M. Blue Plan will assist the Town in the delivery of an efficient and effective fleet management program and aligns with the Town's strategic objectives. Building upon current resources, the Town of Halton Hills can utilize the strategy to develop an approach where data-driven service levels are used to eliminate redundancies and deliver a focused corporate governance model for the management of a growing fleet portfolio.

In addition, the strategy aligns with the objectives identified in the Town's Asset Management Policy to link infrastructure decisions to the Town's overall vision and goals. Therefore, the overall scope of the strategy can be expanded to all groups, departments and divisions in the Town that use or manage fleet assets.

Reviewed and Approved by,

Dick Spear, Superintendent of Public Works

Chris Mills, Commissioner of Transportation and Public Works

Brent Marshall, Chief Administrative Officer

Prepared By:

The Town of Halton Hills

Corporate Fleet Management Strategy
Draft Submission

GMBP File: 618037

May 24, 2019

GUELPH | OWEN SOUND | LISTOWEL | KITCHENER | LONDON | HAMILTON | GTA

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EXECUTIVE SUMMARY

Overview

The Town of Halton Hills (the Town) owns, operates and maintains a fleet of approximately 240 vehicles and equipment with a replacement value of approximately $23M. The recent rapid population growth in the Town is expected to continue over the next 5 to 7 years, increasing by as much as 20,000 from its 2016 population of 61,161. This Corporate Fleet Management Strategy (CFMS) puts the Town on the pathway to deliver fleet management services in a manner that aligns with the Town's strategic objectives, building upon current resources to enable data-driven service levels that eliminate redundancies and bring efficiencies to the management of a growing fleet portfolio.

The CFMS details the method in which the Town will link its fleet management business practices to its overall vision and goals. The CFMS has been informed by both top-down organizational objectives and the bottom-up needs of front-line operations staff.

The CFMS is developed around management considerations related to organization; people and culture; process; and technology and data of the four (4) business processes of fleet management: procurement, operations, maintenance and disposal/replacement (refer to Figure ES-1 below).

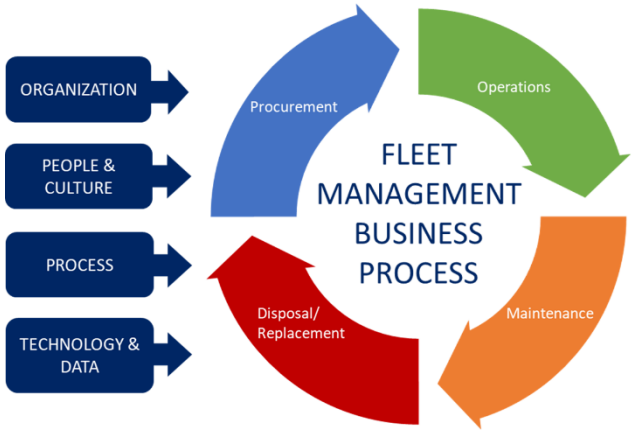

Figure ES-1. Fleet Management Business Process

Recommendations

The CFMS provides eleven (11) recommendations that are grouped into the four fleet business processes, which will enhance the current practices in place in Halton Hills. While the Town is already engaged in several activities that support best practices in Fleet Management, advancing the recommendations below are critical to achieving the goals of the CFMS.

<u>Procurement</u>

- Recommendation #1: Centralize fleet procurement under a single group that engages with subject matter experts from each fleet user group to inform the development of vehicle specifications and other technical elements of the procurement document.

- Recommendation #2: Leverage data to inform the procurement process.
- Recommendation #3: Develop an enhanced fleet procurement approach that can enable lowest lifecycle cost, standardization and the Town's strategic objectives to be considered in the process.
- Recommendation #4: Develop Service Level Agreements (SLAs) as required to bring clarity as to the roles and responsibilities of the entity providing the service that are aligned with the entity receiving the service.

Operations

- Recommendation #5: Implement a Fleet Management software system that tracks operational considerations.
- Recommendation #6: Leverage data to inform a charge out rate for all fleet assets.
- Recommendation #7: Connect environmental considerations to Operational Strategies.

Maintenance

- Recommendation #8: Implement a Fleet Management software system that optimizes and tracks maintenance activities.
- Recommendation #9: Measure and manage appropriate fleet maintenance metrics.
- Recommendation #10: Centralize maintenance management activities, data and processes.

Disposal/Replacement

- Recommendation #11: Implement an Optimum Service Life approach to disposing vehicles.

Organizational Recommendations

Under the Town's current organizational structure, many of the core recommendations of this CFMS can be implemented. Key to the implementation of this strategy, however, will be to centralize the Town's fleet operations under the current fleet management section. This will be achieved by expanding the current fleet section within Public works to support all municipal fleet activities. Within the fleet management section, a role should be designated with the *responsibilities and authority* to execute the elements of this CFMS. Under the current organizational structure, this role is most ideally suited to the current Fleet Supervisor position.

This organizational recommendation is critical to ensuring the successful implementation of the CFMS in the Town over the coming years and should introduce a number of efficiencies if amalgamated under a single section. The successful delivery of this type of initiative typically relies on a strong champion. As such, the Fleet Supervisor position will be responsible for building an annual plan to advance the recommendations of the CFMS in a prioritized manner. This commitment to the CFMS is important to ensuring that its concepts becomes engrained into the day-to-day fleet management activities in the Town.

As the Town's municipal fleet grows, the organizational structure should be reviewed to ensure continued support and enhancement of the Town's corporate fleet management program and asset management processes. In particular, the Town should consider and review the option to create a centralized Fleet Management division, with a dedicated fleet manager position to meet this need.

Closing

The strategic recommendations informed the development of a comprehensive Level of Service (LOS) Framework for the service of FM, which is documented in Appendix A. As part of this CFMS, an implementation plan was produced (documented in Appendix B), which provides a series of project (activities, initiatives, etc.) to operationalize this strategy within the Town.

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DEFINITIONS

Asset: An item, thing or entity that has potential or actual value to an organization.

Asset Management (AM): A combination of management, financial, economic, engineering, and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner at an acceptable level of risk. It involves data-driven decision-making and actions throughout the lifecycle of assets.

Corporate Asset Management (CAM): The application of asset management practices at a corporate level to maximize consistency among the diverse asset groups and create efficiency by harmonizing service levels and business process while considering climate adaptation plans and sustainability strategies.

Asset Management Plans (AMPs): Asset specific plans which are regularly updated to develop data-driven strategies and operational recommendations necessary to achieve objectives and service level expectations.

Asset Management Strategy: Formerly known as Strategic Asset Management Plan (SAMP). A strategy that documents and specifies the method in which organizational objectives are to be converted into AM objectives, the approach for developing AM plans and the role of the AM System in supporting the achievement of AM objectives.

Asset Management System: A set of interrelated and interacting elements of an organization, including the AM Policy, AM Objectives, AM Strategy, AMPs and the processes to achieve these objectives.

Asset Management Policy: A high-level statement of an organization's principles and approach to AM (IIMM, 2015).

Level of Service (LOS): A qualitative or quantitative description of a service that is being provided. Two types of Levels of Service generally exist: Customer (or Community) Levels of Service (CLOS); and, Technical Levels of Service (TLOS).

Performance Measures: Parameters used to measure Levels of Service. They include both Customer and Technical classifications.

Line of Sight: The connection between the Town's high-level strategic objectives, and detailed-level day-to-day activities, carried out by the Town's staff, programs and assets. The Line of Sight clearly illustrates how organizational objectives link to day to day activities.

Asset Lifecycle: A set of phases through the life of an asset that characterizes the ability of the asset to meet an expected level of service and retain its identity as an asset.

Lifecycle Cost: The total cost of ownership of an asset throughout its life. This may include but is not limited to capital costs, operating costs, maintenance costs, renewal costs, replacement or disposal costs, and environmental costs.

ACRONYMS

AM	Asset Management
AMP	Asset Management Plan
CAM	Corporate Asset Management
CFMS	Corporate Fleet Management Strategy
CLOS	Customer Level(s) of Service
CMMS	Computerized Maintenance Management System
FM	Fleet Management
HHCEC	Halton Hills Community Energy Corporation
LOS	Level(s) of Service
PW	Public Works
SLA	Service Level Agreement
TLOS	Technical Level(s) of Service

1. BACKGROUND

The Town of Halton Hills (the Town) owns, operates and maintains a fleet of approximately 240 vehicles and equipment with a replacement value of approximately $23M. The majority of fleet assets are operated by Public Works (PW) and the Fire Department; however, a limited number are operated by the Activan Transit, facilities, or corporate services groups.

The recent rapid population growth in the Town is expected to continue over the next 5 to 7 years, increasing by as much as 20,000 from its 2016 population of 61,161. This Corporate Fleet Management Strategy (CFMS) puts the Town on the pathway to deliver fleet management (FM) services in a manner that aligns with the Town's strategic objectives. It builds upon current resources to work toward an approach where data-driven service levels are used to eliminate redundancies and bring efficiencies to the management of a growing fleet portfolio.

2. PURPOSE AND SCOPE

2.1 Purpose of the Corporate Fleet Management Strategy

This CFMS is a component of the Town's overall asset management (AM) Strategy. The strategy will detail the method in which the Town will link its FM business practices to its overall vision and goals. The strategy, as detailed in this document, achieves the following objectives:

- Aligns with the Town's Corporate Asset Management (CAM) Program and AM Policy, which have been developed to align with the Town's Strategic Plan;
- Documents the Town's goals and objectives for providing fleet services across the Town and FM;
- Defines the scope of FM at the Town;
- Describes the approach to practicing FM at the Town;
- Establishes a Governance Model for the Town to effectively manage fleet assets; and,
- Provides an implementation plan for the Town to achieve its FM objectives.

2.2 Objectives of the Corporate Fleet Management Strategy

This CFMS strives to achieve the following goals:

- Streamline and standardize current FM practices within the Town;
- Ensure that current resources are leveraged, including training and coverage, to provide maximum value;
- Ensure that service levels are clearly defined and can be measured and managed;
- Create a more efficient and cohesive Town-wide FM strategy and approach;
- Support the Town through anticipated growth and demands to optimize spending;
- Support the addition of possible future fleet areas of business; and,
- Position the Town to leverage enhancements in technology to better manage fleet assets moving forward.

2.3 Scope of the Corporate Fleet Management Strategy

The scope of this CFMS pertains to all groups, departments and divisions in the Town that manage fleet assets. At the time of this initial strategy development, these groups included:

- Public Works;
- Transportation (Activan);

- Engineering;
- Building Services/CBO;
- Facilities;
- Parks and Open Space;
- Recreation Services; and,
- Fire Services.

Note that in the development of this strategy, consideration was given to the relationship between the Town and Halton Hills Community Energy Corporation (HHCEC). It is recognized that the FM business practices of the Town and HHCEC are intertwined to some degree. It should be noted that the contents of this strategy do not directly apply to HHCEC. Since HHCEC is a separate organization from the Town of Halton Hills, it is governed by a separate set of organizational objectives. Although this strategy does not explicitly apply to the organizational objectives for HHCEC it does, however, provide recommendations for the management of fleet assets that is based on industry best practices and research, which HHCEC can apply to its FM business. As a result, this strategy addresses these areas of business and provides content in this regard that can be utilized by both organizations.

3. STRATEGIC ALIGNMENT

3.1 Role of the CFMS in the Town's Asset Management System

Asset Management (AM) is an integrated series of processes intended to make the best financial investments into infrastructure assets to provide and maintain services. A number of AM practices are in place in the Town already. AM is not limited to only the municipal departments that are directly responsible for maintaining those assets. It is a multidisciplinary practice which involves many municipal departments, all of which have a role in making decisions around planning, managing and maintaining the Town's assets. AM aims to balance costs with levels of service (LOS), risk and lifecycle management strategies. Its goal is to achieve sustainable, resilient communities, through defined business processes, which result in better decision-making with respect to infrastructure assets, of which fleet assets are a subset. AM is an ongoing practice at the Town and not limited to individual studies or reports.

Two major legislative requirements are in place, which affect the direction of Asset Management for municipalities in Ontario. The first, enacted in 2015, was the *Infrastructure for Jobs and Prosperity Act*. The second, *Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure*, was created in 2017 under the Act. This regulation details requirements for municipalities to develop an AM Policy and Asset Management Plan (AMP), which also necessitates the development of an AM Strategy. The Town's AM Policy, AM Strategy and AM Plan are all components of an "AM System".

An AM System is a management system. It is a way of doing business and a process for making decisions that connects the Town's high level strategic goals (i.e. the commitments and principles in the AM Policy, Strategic Plan, etc.), with the day-to-day activities that Town staff are engaged in. The AM system is a broad collection of interconnected processes and documentation that is designed to direct and deliver the discipline of AM across the Town.

This CFMS is a subcomponent of this AM System. More specifically, it is a subcomponent of the Town's AM Strategy. This AM Strategy (including the FM strategy) serves the purpose of detailing the method in which higher level corporate objectives will be achieved through the practices of AM and FM.

The following graphic illustrates the Town's AM System.

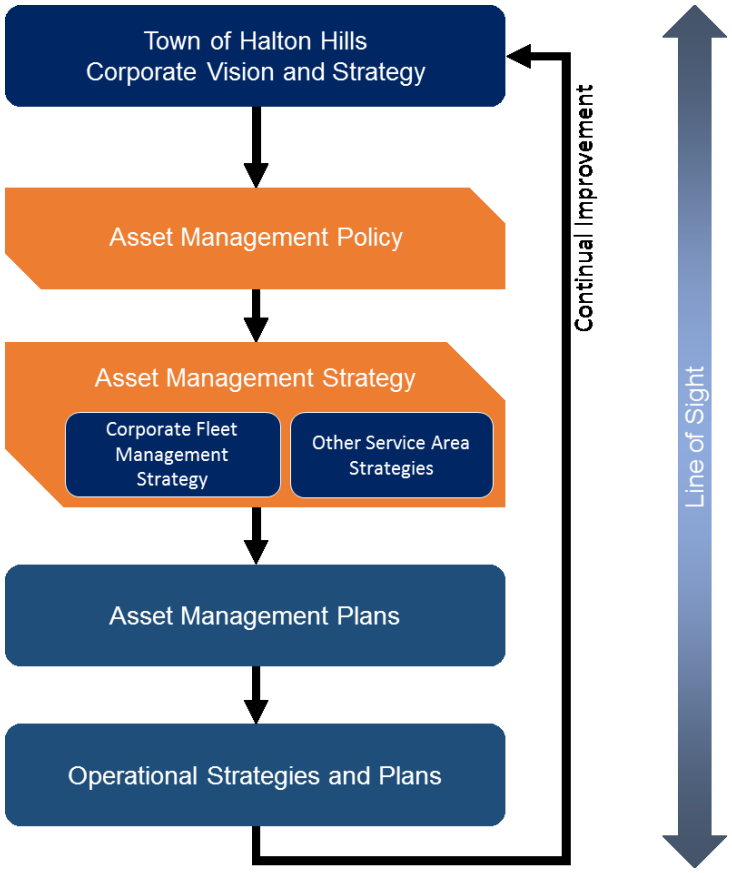


Figure 1. Framework of the Asset Management System

This graphic illustrates the hierarchy of the Town's AM System. It illustrates the link between high level corporate vision and strategy, to the tactical level of AM. This link is referred to as a "Line of Sight" within the ISO 55000 Asset Management Standard. This CFMS links to the Town's AM Policy, and details how the tactical level of FM will be executed so that it achieves the Town's AM objectives.

3.2 Alignment to Strategic Initiatives

This CFMS is aligned to the Town's strategic objectives through the Town's AM Policy. The CFMS sets out to document the Town's strategy for FM and ensure that this strategy aligns with the objectives and commitments detailed in the AM Policy. The key objectives for AM that are listed in the Town's AM Policy are detailed below. Through this CFMS, the Town will detail its approach to managing fleet assets in a way that is aligns with these objectives. Some of the relevant objectives form the Town's AM Policy are highlighted below:

- **Customer Focused:** This strategy will take a customer-focused approach, by defining customer levels of service, and integrating them into the Town's FM business practices.
- **Innovative:** This strategy will establish a framework for the continual improvement of FM practices across the Town, so that new tools, technologies and techniques can be adapted to the Town's FM business now and in the future.

- **Fact Based Decision Making:** This strategy will detail business processes and provide recommendations to collect and maintain appropriate data and information, so that FM decisions will be made based on facts in a way that is flexible, consistent, repeatable and traceable.
- **Optimal:** This strategy details approaches to make optimal decisions with respect to fleet assets, that balance levels of service, cost and risk to achieve optimal lifecycle values.
- **Whole Lifecycle Perspective:** Strategies for fleet assets will take a whole lifecycle perspective that considers the full impact of managing those assets throughout their entire lifecycle.
- **Integrated System Focused:** This strategy is developed in alignment with the Town's AM Policy and AM Strategy and how fleet assets support other Departmental objectives, to ensure that FM practices are integrated with AM practices across the organization.
- **Forward Looking and Sustainable:** Social, legislative, environmental and financial considerations are made to ensure that FM is forward looking and sustainable.
- **Regulatory Compliant:** The practice of FM at the Town will comply with all relevant legislative, regulatory and statutory requirements.
- **Risk-based:** Levels of service will be defined and balanced against risk and expenditures to ensure that the Town manages fleet assets using a risk-based approach.

Keeping in mind these objectives, this CFMS will detail business practices to further the Town's FM practices, in alignment with its AM System.

3.3 How the Strategy Achieves Fleet Management Objectives

This CFMS was developed for the Town to achieve its organizational, AM, and FM objectives. It will provide recommendations to improve business processes and activate advanced FM strategies. Note that the discussion and recommendations detailed in this strategy are not intended to be a critique on the Town's existing FM business practices. They are intended to provide guidance to the Town in the advancement of its FM current business practices, to leverage industry best practices, AM strategies, and emerging technologies to achieve its goals and objectives.

The recommendations provided are not just specific recommendations to better improve or manage business processes; rather, they are also recommendations to adopt a system for FM which has the tools to assess and continually improve its business practices.

Part of the strategy development included a review of FM best practices from peer municipalities (refer to Section 4 for details). These reviews provided context for the development of this strategy and insight into best practices in FM. These reviews were not intended to be a benchmarking exercise to inform the Town's future development of its FM business. Through the implementation of this strategy, the Town will activate management systems and tools to enable evidence-based decision making for tactical decisions such as the ideal number of mechanics to execute the ideal set of preventative and reactive maintenance activities.

4. BUSINESS CONTEXT

This CFMS has been developed to support the Town in meeting its top-down strategic organizational objectives and the bottom-up needs of front-line operations staff. Top-down considerations reflect the priorities of Senior Management, Strategic Objectives of the organization and the regulatory requirements of O.Reg. 588/17 as described in the previous section.

Bottom-up considerations reflect the needs and goals of FM staff and were informed by interviews with the Town's FM staff (including management staff and mechanics), as well as a review of current fleet best practices. As part of the development of this CFMS, several workshops were conducted with FM staff. Through these workshops, information about the Town's current practices, future vision, goals, strategic drivers and business drivers for FM were communicated. FM best practice research was also conducted as part of the development of the CFMS. This included telephone interviews with fleet managers of several peer municipalities. Participating municipalities included the Regional Municipality of Halton, City of Guelph, City of London and the City of Oakville. This CFMS was developed in the context of the information obtained from this research and the information obtained from staff workshops as well as knowledge GMBP has gained through several AM and CMMS implementations with Fleet Departments.

The following figure illustrates the approach to developing the CFMS.

Figure 2. Process for Developing the Corporate Fleet Management Strategy

5. FLEET MANAGEMENT BUSINESS PROCESS

The Town's FM business process is comprised of four (4) major business areas, which pertain to the stages of the lifecycle of fleet assets. These business areas are:

- Procurement;
- Operations;
- Maintenance; and,

- Disposal/Replacement.

This CFMS details the business of FM, as centred around four primary management elements: Organization; People and Culture; Process; and, Technology and Data. The following graphic illustrates the framework of the Town's FM business process.

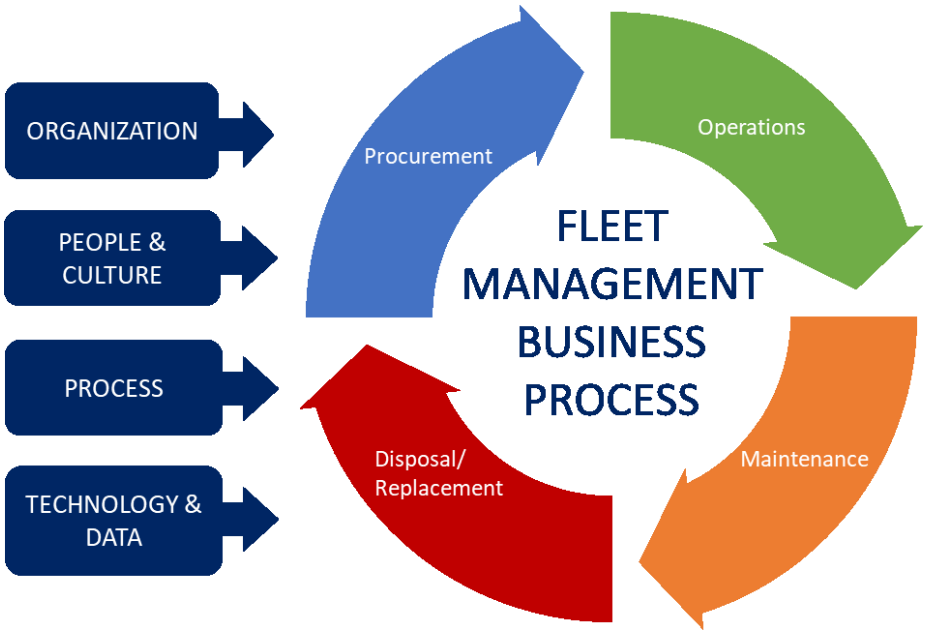


Figure 3. Fleet Management Business Process

The following subsections elaborate on each of the four (4) primary categories of the FM Business Process. Each subsection details the general business processes and the Town's goals for that process; the Town's existing business practices; strategic recommendations to align with AM and FM best practices; and, an evaluation on the effects of implementation of these recommendations.

5.1 Procurement

5.1.1 Context and Objectives

Procurement is the process in which the Town obtains its fleet assets for use. It requires a detailed preparation process and must account for many factors, including: selecting the appropriate vehicle for its intended use; right-sizing vehicles; right-sizing overall fleet; and, maintenance considerations related to the standardization of vehicles/equipment.

The following CFMS objectives have been established for Procurement:

1. Purchase fleet assets that meet customer expectations for the lowest cost to the Town over their full lifecycles, which is not necessarily the lowest up-front cost.
2. Develop a comprehensive standard for fleet assets to simplify management of parts; standardize maintenance work; and, optimize maintenance strategies.

3. Ensure procurement practices take strategic goals into consideration.

5.1.2 Current Business Practices

Fleet personnel currently work with purchasing staff to obtain new vehicles and equipment. Fleet procurement is not centralized under one department, rather, each fleet manager (for each department) is responsible for developing specifications and procuring vehicles for their respective departments with the support of the Town's corporate Procurement department.

The Town's purchasing by-law applies to FM procurement practices. As per the Town's purchasing by-law, the following purchasing rules apply:

- For assets with value of $10,000 or less, open procurement is acceptable, and no quotations are required;
- For assets with a value of $10,001 to $25,000, informal quotations are required, with at least three bids solicited;
- For assets with a value of $25,001 to $100,000, formal quotations are required, quotations are administered by purchasing and approved by the commissioner;
- For assets with a value of greater than $100,000, a formal tendering process is required. Tendering is administered by Purchasing and approved by the CAO; and,
- For assets with a value of greater than $500,000, a formal tendering process is required. Tendering is administered by Purchasing and approved by Council.

The following items capture other relevant current business practices and opportunities to enhance practices related to procurement:

- At present, the Town's fleet requires a comprehensive standard, which considers optimized full lifecycle costs of fleet assets not just purchase costs, due to the current competitive procurement process. Town FM staff have expressed that the standardization would be of benefit to the Town's business practices, and the best practice review affirmed that standardization is a common challenge of balancing FM with competitive procurement processes.
- The Town's fleet presently consists of owned vehicles. A leasing and/or renting model has not been investigated by FM staff, however has been deemed to be impractical for fleet assets with high usage/mileage.
- Right sizing of fleet assets is currently done qualitatively. An opportunity exists to collect data and introduce data analytics over the lifecycle of the asset to support decisions made with respect to right-sizing.
- Staff has indicated that procuring vehicles to share among different groups is a practice that could be applied to increase the utilization of some vehicles, for example, procuring a vacuum truck that can be utilized between multiple agencies (such as the Town and HHCEC).

5.1.3 Recommendations

Recommendation #1: Centralize fleet procurement under a single group that engages with subject matter experts from each fleet user group to inform the development of vehicle specifications and other technical elements of the procurement document.

Centralizing fleet procurement under a single group allows the Town to develop focused expertise on the procurement process that can appropriately incorporate considerations related to lowest life cycle cost procurement, vehicles standardization, and connecting the Town's strategic objectives into the process. Inclusion of the subject matter expert staff who use the fleet assets on a day-today basis is imperative due to the range of vehicle types that exist in the Town (i.e. fire apparatus, pickup trucks, construction equipment). Specifications for specialized vehicles should be developed through collaboration with managers of each front-line user group. This is especially important for specialized vehicles such as fire apparatus, which have specialized procurement details requiring specialized input.

Recommendation #2: Leverage data to inform the procurement process

Collecting and analyzing fleet data will be imperative to the successful implementation of procurement strategies. Through collected data, the Town will be able to justify procurement decisions related to procuring fleet assets that have a higher initial cost but a lower total lifecycle cost; that will bring savings through standardization despite a higher initial cost; or, that have a higher initial cost but better meets a Town strategic objective (i.e. lower/zero emission vehicle). Data collection will be the foundation for evidence-based decision-making with respect to procurement. It will inform the procurement approach detailed in Recommendation #3, below. Data collection strategies are typically tied to operations and maintenance activities and collected through a computerized maintenance management system (CMMS). Recommendations for data collection strategies are detailed in Subsection 5.3.3 below.

Recommendation #3: Develop an enhanced fleet procurement approach that can enable lowest lifecycle cost, standardization and the Town's strategic objectives to be considered in the process.

This will be achieved via a standardized evaluation approach/scoring system that captures appropriate CFMS considerations, such as technical (i.e. does the vehicle meet the requested specifications); financial (i.e. what is the initial cost and the expected lifecycle cost); and, strategic objectives such as environmental (i.e. what is the annual fuel consumption). This evaluation approach will enable the Town to make fleet procurement decisions that achieve the CFMS objectives. The information required to enable this approach will be obtained through collected data (refer to Recommendation #2, below). For example, collected data will be able to provide evidence to support whether or not vehicle standardization results in a lower lifecycle cost.

Recommendation #4: Develop Service Level Agreements (SLAs) as required to bring clarity to the roles and responsibilities of the entity providing the service and the entity receiving the service.

Formal SLAs will be the mechanism to document the services being provided by the Town's FM group to either internal groups (i.e. fire department, public works) or external groups (i.e. HHCEC). SLAs will enable vehicle sharing or the delegation of procurement/maintenance responsibilities by detailing issues such as vehicle ownership, financial reimbursement/compensation, utilization between groups/organizations and maintenance responsibilities. SLAs are common best practices for single sourced management departments, such as fleet, IT, purchasing, etc., to ensure the expectations of the multiple departments they support are clearly documented and integrated into decision making practices.

5.1.4 Discussion

Centralizing the process to develop vehicle specifications for procurement will create efficiencies by offloading this task to a centralized role. Staff commitments from each department will still be necessary but minimized to the technical elements of vehicle specifications, since the bulk of procurement work can be completed by this centralized group/person.

Developing service level agreements between the Town and HHCEC will enable vehicle sharing between the organizations and result in efficiency gains by increasing utilization of vehicles and therefore possibly reducing the number of fleet assets required to support these Departments. It will also allow the Town to obtain new vehicles that it has a need for but may not be able to fully utilize. By sharing utilization with HHCEC, the Town would be able to obtain these vehicles that that it could not otherwise, which will result in an overall increase of service.

Enabling data-driven procurement strategies will allow the Town to reduce its overall costs, by ensuring that the appropriate vehicle is procured, for the lowest possible lifecycle cost.

5.2 Operations

5.2.1 Context and Objectives

This business practice pertains to activities associated with the day-to-day operation of fleet assets throughout the course of their service life. Operations activities include tracking and managing equipment utilization, environmental considerations (i.e. fuel consumption) and financial considerations (i.e. vehicle rates).

The following objectives have been established for Operations:

1. Optimize the in-service time of fleet assets that enable business units to provide services that meet the community's/customer's expectations at the lowest feasible cost.
2. Leverage technology to inform equipment/vehicle rate calculation.
3. Minimize environmental impact during fleet operations.

5.2.2 Current Business Practices

Generally, for public works, parks and transit vehicles, operating budgets for each of the units are funded through an hourly charge out rate that is calculated according to lifecycle costs and usage. The charge out rate is based on anticipated costs for mechanics labour, parts, tires, fuel, insurance, licensing, overhead as well as funding the replacement of the vehicle at the end of its service life. This approach to creating an operating budget has not been adopted by all departments. Presently, the charge out rate is developed by the finance group with input from technical staff.

Fleet utilization rate metrics are tracked by the Town based on hours billed through its costing model. As a result, utilization metrics are only tracked for public works, parks and transit vehicles. Fire services tracks vehicle utilization for its apparatus by emergency calls received. Although the majority of business areas employ some form of data-based tracking of utilization, some areas track utilization qualitatively (this applies only to a small number of vehicles).

At present, the Town has some strategies in place that address environmental considerations. The Town uses vehicles in multiple roles wherever possible to increase utilization (thus, reducing environmental impact). For example, some grass-cutting vehicles can be fitted with a snow plow to be utilized in the winter to clear sidewalks. Other environmental strategies are not in place.

5.2.3 Recommendations

Recommendation #5: Implement a Fleet Management software system that tracks operational considerations

Collecting and analyzing fleet operations data will be imperative to the successful implementation of the CFMS. Through collected data, the Town will be able to have clear evidence to establish the vehicle charge out rates by understanding the number of hours each asset is being used, fuel consumption, hours/kilometers in service, etc. This data can be analyzed to understand variations over time (i.e. trending over months/years) or by weather conditions (i.e. lights vs heavy winter, dry vs wet summer, etc.). At present, data for the charge out rate is obtained from the Town's financial system. Using data from a FM system that is connected to the financial system will provide better data to inform the charge-out rates.

Recommendation #6: Leverage data to inform a charge out rate for all fleet assets

It is recommended to develop a charge-out model for all rolling stock, and not just public works, parks and transit vehicles. This includes capital and maintenance charge-out rates (i.e. for the Fire department, maintenance is only applicable). This model should be standardized and consistent across all service areas where applicable. The model should be developed, maintained and applied by a centralized fleet staff member, still with input from the finance group, to ensure that subject matter expertise is applied to the model development.

Recommendation #7: Connect environmental considerations to Operational Strategies

Over time, the Town's strategic environmental goals will be achieved in part through fleet operational strategies. For example, anti-idling policies can be implemented to reduce the Town's environmental impact and the benefit will be measured using operational data. It is important to note that these policies cannot necessarily be applied to all vehicle types, as some vehicles such as fire apparatus require idling while in service. Furthermore, anti-idling policies should also take into consideration the health and safety of workers, since some vehicles are regularly used for heating and cooling while in the field. Technology, such as idling time trackers can assist in implementing an anti-idling policy. Other areas where environmental considerations can be connected to fleet operational strategies include monitoring fuel consumption to identify high-consumption assets or the analysis of individual vehicle operators that consume more fuel than others due to the operational practices.

5.2.4 Discussion

Applying the charge-out model to all fleet assets using data from a FM system will bring efficiencies to the delivery of front-line services to Town residents and business. This will be accomplished by maximizing the utilization of fleet assets (and therefore minimizing their charge-out rate), and by having a confident full cost recovery charge-out rate that connects back to the lowest lifecycle cost procurement strategy.

The adoption of additional environmental strategies and policies will create efficiencies in normal vehicle operation practices, reduce lifecycle costs to operate vehicles, and ensure that organizational and AM objectives related to environmental stewardship are achieved. Once implemented data analysis can be completed for environmental

considerations to ensure that they are continually improved upon and tailored to be effective, cost-efficient and optimized.

5.3 Maintenance

5.3.1 Context and Objectives

Activities associated with maintaining fleet assets have an impact on all areas of the fleet business. Maintenance activities are generally categorized by two types: preventative and reactive. Preventative (or planned) maintenance relates to regularly scheduled maintenance activities; and reactive (or unplanned) maintenance relates to activities required due to failures or damage. Both types of maintenance activities aim to reduce vehicle down-time and optimize vehicle performance. Data on maintenance practices is critical to enable evidence-based decision-making with respect to procurement, disposal and operations/lifecycle strategies for fleet assets.

The following objectives have been established for Maintenance:

1. Complete maintenance activities for the lowest possible cost, at the optimal time and in the lowest amount of time to optimize the service life of vehicles.
2. Minimize vehicle down-time and ensure that vehicles can be brought in for maintenance with minimal disruption in service.
3. Leverage technology to collect appropriate maintenance data and activate advanced maintenance strategies.

5.3.2 Current Business Practices

Maintenance occurs in a centralized location at the Town's operations centre. Although activities occur at a centralized location, the organizational structure governing maintenance is not centralized. The PW department employs four (4) mechanics, which maintain all PW vehicles, including both Road and Parks operations; Activan Transit; and, facility support vehicles. These mechanics possess 310S and 310T certifications. Approximately 15% to 20% of maintenance activities are contracted to external providers.

Fire apparatus are maintained by a staff member who was a former mechanic. This staff member primarily completes minor maintenance activities and possesses 310T and EVT certification. Fire services utilizes a mechanic from HHCEC (with 310T and EVT certifications) to contribute to the maintenance of fire apparatus on an as-needed basis. Annual certifications of fire apparatus are completed by this mechanic as well. Remaining fire services maintenance activities are contracted to external providers, which represents a significant portion of maintenance activities.

At present the Town has implemented an informal maintenance management strategy. Part of this strategy includes informal tracking of maintenance activity, which is mostly completed manually. Contracted services are also tracked in the Town's budget. The Town does not currently utilize a computerized maintenance management system (CMMS). The Towns' financial system, *Great Plains*, is the best available information source for the quantity of maintenance that is completed on each asset, however the details are generally limited to the cost and text description of the asset.

For the PW department, staff have developed a simple asset inventory to assist with budgeting and replacement forecasting. This inventory houses important asset information but is not at present tied to maintenance information. Inventories for Fire fleet assets have also been developed internally and contain a lower level of detail than the PW fleet asset inventory.

5.3.3 Recommendations

Recommendation #8: Implement a Fleet Management software system that tracks maintenance activities

It is imperative for the Town to collect and maintain detailed data on the maintenance activities completed on fleet assets, including maintenance activity details such as type (preventative vs reactive), hours, purchased materials and costs. The information should be collected through a CMMS and tied to an inventory of assets, similar to the inventory that was developed for PW fleet assets. This CMMS should be linked to the Town's Corporate AM software. It is also important that maintenance staff are trained on the appropriate use of the CMMS as part of its roll-out.

Prior to procurement of a CMMS, a needs assessment should be completed, which will define the detailed specifications and processes for how the CMMS will be used. Typical CMMS implementations include some of the following functionality:

- Technical architecture based on a common and open platform that can integrate with a variety of Town technology platforms such as finance, etc.;
- Compatibility with the operating system used at the Town;
- Ability to be useable on devices issued to Town staff, such as smartphones and tablets;
- Support for asset management of fleet assets through the full lifecycle;
- Ability to maintain an accurate inventory of assets and parts/supplies, including scanning of parts during maintenance activities;
- Tracking of fuel management related information (odometer readings, fuel costs, etc.);
- Tracking of costs;
- Tracking of maintenance activities, distinguishing between preventative and reactive maintenance;
- Ability to identify when assets require maintenance on a predefined schedule (i.e. preventative maintenance) allowing PM work to be optimally planned if a vehicle is brought in for repairs;
- Ability to allow staff to generate work order requests;
- Real-time support for maintenance operations and technician time tracking;
- Ability to automate work flow and routing of work orders;
- Identify when assets need to be replaced based on predefined criteria and trend asset performance over time;
- Track service level agreements;
- Support customer communications regarding job status and scheduling of service appointments;
- Support the development of analytics to indicate trends and historical performance;
- Generate detailed reports;
- Link to the Town's Corporate AM software;
- Be scalable and adaptable to future business needs and technology changes; and,
- Adhere to all Town, Provincial and Federal policies and regulations regarding privacy and data.

Recommendation #9: Measure and manage appropriate fleet maintenance metrics

The Town should formalize its maintenance management strategy, by identifying the appropriate metrics that should be measured and managed using the CMMS data. The conceptual Level of Service table developed (refer to Appendix A) provides some insight into the industry best practices of metrics that are used in advanced FM groups. These

metrics should be analyzed on a monthly/annual basis as appropriate to enable the Town to optimize the number and type of maintenance activities completed.

Recommendation #10: Centralize maintenance management activities, data and processes

The typical best practice approach is to centralize fleet maintenance management to develop efficiencies. This approach is founded in industry best practices, which were validated by the best practice review completed as part of the development of this CFMS and is reflected in a number of Enterprise CMMS implementations currently underway across Ontario (i.e. Waterloo, Peel, Toronto, Ontario Clean Water Agency, Welland, St. Thomas, etc.).

As a result, it is recommended that maintenance management be centralized through a single group. This will ensure a coordinated Town-wide approach to prioritizing maintenance activities and ensuring the appropriate staff are assigned to complete each activity. This approach will still enable fire department staff to complete the maintenance activities on fire apparatus but will also ensure that the appropriate information is being collected through the CMMS as the activities are completed.

To support this recommendation, the Town should develop a maintenance priority matrix which ranks the need for competing maintenance of assets based on factors including mileage, time in service, criticality of service provided and repair costs. This centralization will also ensure that appropriate training is provided to maintenance staff to ensure that skill sets are developed for the full range of fleet vehicles, including light/heavy vehicles and emergency vehicles (i.e. EVT designation). In particular, training is required for the certification of fire apparatus.

As noted above, annual certifications of fire apparatus are completed by a mechanic from HHCEC with an EVT designation. This business model represents the short-term solution to have fire apparatus certified. Service level agreements should be maintained in order to ensure that this business practice continues. Long-term plans for maintenance include obtaining the appropriate training to certify fire apparatus in-house. As a supplement to this long-term strategy, service level agreements with HHCEC can be kept in place to handle unforeseen circumstances, such as peaks in workflow or emergency situations.

5.3.4 Discussion

Centralizing maintenance activities will increase efficiencies for the Town by increasing utilization of maintenance staff, providing a larger qualified pool to complete maintenance activities, and sharing specialized maintenance skills (ex. EVT designation) across departments. Centralization of maintenance activities will also allow the Town to better manage the amount of maintenance that is currently being contracted to external providers. It is expected that some external contracting will be required moving forward (for example, to manage peaks in maintenance activities); however, the amount can be minimized to ensure maximum value is obtained from Town staff. A centralized maintenance management department can also take advantage of efficiencies with respect to staff training.

The implementation of new data collection practices through a CMMS may not necessarily result in a short-term increase in efficiency; however, over time it will allow the Town to activate advanced maintenance strategies that will result in efficiency gains. Examples of these types of strategies include: optimization of fuel/oil consumption; minimizing down time; identification of problematic assets (i.e. lemons); optimization of repair strategies; and, prediction of preventative maintenance needs.

Furthermore, strategies to identify and maintain an appropriate ratio of preventative to reactive maintenance can also be implemented through collection of this data, which will result in the minimum possible down time for assets

and the lowest possible maintenance costs. The collected data will also inform maintenance staffing requirements, which will result in optimization of staff and minimization of external contracted maintenance.

The development of a priority matrix will create efficiencies in maintenance activities, and ultimately the operation of fleet assets, by ensuring that assets are maintained at the appropriate time and downtime of assets due to maintenance activity is minimized.

It is noted that the certification of fire apparatus is currently shared with HHCEC. There is no reason for this business model to change at present (i.e. in the short-term); however, note that longer-term maintenance plans include the development of a full suite of maintenance skills in-house, including fire apparatus certification (refer to Recommendation #3) Note that under the short-term plan, the development of formal service level agreements with respect to maintenance will be required to ensure that coordination and standardization is maintained between the Town and HHCEC.

5.4 Disposal/Replacement

5.4.1 Context and Objectives

The category of disposal and replacement pertains to the activities related to selecting the appropriate time to dispose of (or replace) a vehicle. It also pertains to the financial activities associated with disposing vehicles and the methods of disposal. The decision to dispose of or replace a fleet asset must account for the asset's condition, the financial impact to the Town, and the optimum time to replace the asset.

The following objectives have been established for Disposal/Replacement:

1. Reduce lifecycle costs by determining the optimum age to dispose of or replace fleet assets.
2. Utilize disposed vehicles as spares, where possible.

5.4.2 Current Business Practices

At present, the Town determines vehicle lifecycles and times for replacement based on a review of inspection reports and vehicle kilometers. Lifecycles are not standardized across business areas. An informal process is in place to keep equipment and vehicles beyond the end of their estimated service life to create a spare ratio. This practice is sometimes completed across departments (ex. fire prevention vehicles will be transferred to PW at the end of life to be further utilized as spares). Spare ratios are not formally tracked for PW and fire services do not maintain any spare apparatus.

5.4.3 Recommendations

Recommendation #11: Implement an Optimum Service Life approach to disposing vehicles

It is recommended that the Town implement an "Optimum Service Life" approach to determine the appropriate asset disposal/replacement age/mileage/condition. As fleet assets age, they typically reach a point where they require more annual maintenance or have higher annual operating costs while seeing a decline in resale/salvage costs. Optimum service life calculations should consider resale/salvage costs as well as lifecycle costs of the asset, which can be compared against changes to annual operating and maintenance costs and down time as the asset ages. In order

to complete the optimum service life analysis, the Town must collect the appropriate maintenance and operation data, as well as tracking the salvage/resale value of assets.

As part of its strategy for maintaining spare vehicles, the town should continue to use vehicles as spares at the end of their service lives. This process should be formally defined and standardized across all service areas and spare ratios should be formally tracked.

5.4.4 Discussion

Presently, through staff knowledge, several factors are incorporated into decision-making with respect to vehicle lifecycles. Best practices are to standardize this process and collect data in order to make decisions in a more analytical fashion. By collecting and analyzing the appropriate data, several types of analyses can be performed, including analyses of long-term impacts and annual maintenance costs based on age of a vehicle, which will affect decision-making in the long term as well as in the short-term.

As a result, an opportunity exists for the Town to enhance its existing lifecycle strategy, to incorporate the collection of additional data and these types of analyses. Lifecycle decisions can then be based on a number of factors including mileage, inspection reports, annual maintenance costs, depreciation, and operating costs. This will activate an optimum service life analysis. Utilizing data to make disposal and replacement decisions will improve efficiency for this process and will reduce financial impact to the Town by ensuring that the lowest possible annual cost of ownership is achieved for each vehicle.

6. GOVERNANCE STRUCTURE

6.1 Context and Objectives

The Town's governance structure represents the organizational component of managing fleet assets. Establishing the appropriate governance structure will be imperative to successfully executing the recommendations provided in this CFMS.

In keeping with the Town's CFMS goals, the governance structure objectives are to:

- Optimize fleet services, including required resources and infrastructure;
- Meet organizational needs;
- Eliminate redundancies and overlaps where the same or similar services are provided by other Town divisions, subdivisions or municipally owned agencies; and,
- Prepare FM to support anticipated growth.

6.2 Current Governance Structure

The Town's current organizational structure is illustrated in the following figure:

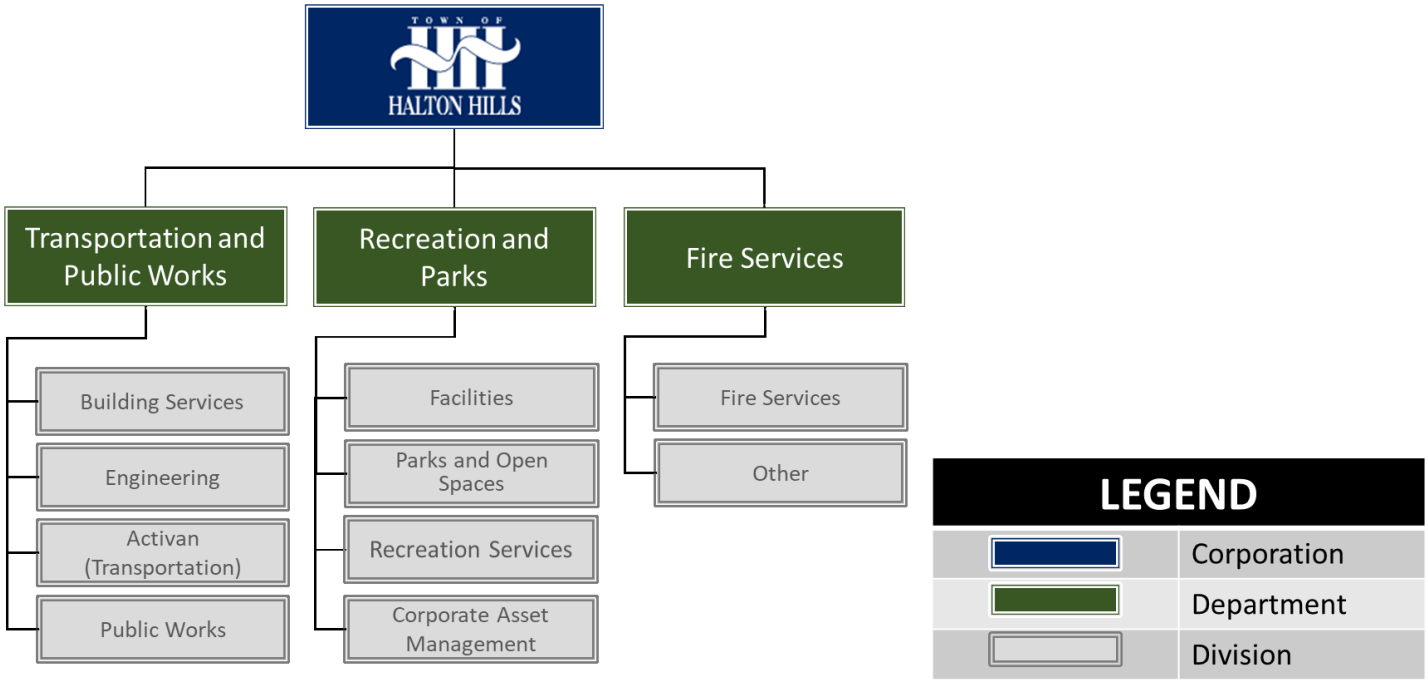


Figure 4. Halton Hills Organizational Structure (Departments with Fleet Assets)

Under the Town's organizational structure each group is responsible for the management of its own fleet assets. Three groups that own the bulk of fleet assets operate with some form of collaboration. These groups are: Transportation & Public Works; Fire Services; and, Halton Hills Hydro (a division of HHCEC). Note only two of these three groups are part of the Town of Halton Hills and are reported as municipal assets. The third group, Halton Hills Hydro, is a division of HHCEC, which is not part of the Town of Halton Hills' governance structure.

Currently, there is some collaboration of activities between municipal departments that generally includes vehicle maintenance and the sharing of services such as snow plowing and tree-cutting.

As noted in Subsection 2.3, the scope of this CFMS (including the governance structure) applies to the Town and does not include other separate entities such as HHCEC; however, it is recognized that there is a collaborative working environment between these two corporations. This CFMS strives to maintain that collaboration through the recommendations to development and maintain formal service level agreements between the two corporations.

6.3 Recommendations

To improve efficiencies and meet the above-noted governance commitments, it is recommended that the Town centralize its current fleet operations. Under the current organizational structure, this can be achieved by expanding its current fleet section within Public Works to support all municipal fleet activities. This section will be responsible for the management of all fleet assets across the Town. Within the fleet section, a role should be designated with the

responsibilities and authority to execute the elements of this CFMS. Under the current organizational structure, this role is most ideally suited to the current Fleet Supervisor position.

Under the current organizational structure, the Fleet Supervisor role should be expanded to:

- Champion, promote and build momentum for the CFMS implementation;
- Lead coordinated FM activities across the Town;
- Develop, manage and report on LOS metrics;
- Manage maintenance staff;
- Implement FM strategies related to procurement, operations, maintenance and disposal/ replacement;
- Lead coordination and development of Service Level Agreements between the Town and other organizations (i.e. HHCEC);
- Implement and manage FM technologies (i.e. CMMS); and,
- Coordinate with the Town's CAM team.

The Fleet Supervisor's responsibilities will be to:

- Ensure consistency of FM practices across departments;
- Project manage the execution of the Town's CFMS;
- Develop and manage the Town's FM and maintenance teams;
- Provide technical advice related to the FM to departmental staff;
- Collect tactical and operational-level data and feedback on FM practices, to be used to continually improve FM strategies;
- Develop and maintain Service Level Agreements for all shared vehicles/services;
- Coordinate FM training for staff;
- Perform fleet prioritization activities, and recommend an optimized capital plan; and,
- Communicate resourcing needs to the CAM team.

As the Town's municipal fleet grows, the organizational structure should be reviewed to ensure continued support and enhancement of the Town's corporate FM program and asset management processes. In particular, the Town should consider and review the option to create a centralized fleet management division, with a dedicated fleet manager position to meet this need.

6.4 Discussion

Centralizing FM activities under the Public Works fleet section will enable several opportunities to increase efficiencies across the Town's FM business practice. These changes/enhancements include the following:

Table 1. Efficiencies of Centralized Fleet Management Section

Item	Efficiencies Gained
Centralize fleet operations	• Eliminates redundancies of some staff activities such as tendering activities and capital purchases. • Eliminates need to standardize operations across separate departments – one section is responsible.
Centralize maintenance staff	• Creates efficiencies in staff – staff members utilized fully to manage fleet assets in all department. • Eliminates redundancies.
Resource sharing	• Creates efficiencies by sharing resources across departments and managing one centralized pool of staff.
Oversee implementation and management of CMMS	• Eliminates redundancies in staff commitment – centralized fleet section responsible for implementation and management.
Accommodates future growth	• Centralized fleet section allows flexibility in growth – multiple departments no longer responsible for managing growth. • Creates a system that can easily accommodate future growth and new fleet business areas – standardization allows for easy scaling of business practices as needed.
Staff training	• Creates efficiencies in staff training – training operations under one fleet section.
Standardization of fleet practices	• Eliminates resource and time needs to standardize practices among managers of several departments that manage fleet assets – one role (i.e. fleet supervisor) responsible for practices and ensuring standardization.
Alignment with AM Objectives	• Creates efficiencies to ensure that single role (i.e. fleet supervisor) responsible for ensuring that fleet practices are in alignment with overall AM objectives and AM system.

7. LEVELS OF SERVICE

As part of the implementation of this strategy, key strategic recommendations have been provided to be incorporated into the Town's existing FM business practices. These strategic recommendations, along with the Town's existing FM business practices, have informed the development of a comprehensive Level of Service (LOS) Framework for the service of FM.

The development of the LOS Framework was completed through a working session with the Town's key FM management staff and subject matter experts. The details of the framework are illustrated in an LOS table. Both

Technical and Customer LOS were derived. The complete LOS table is provided in Appendix A. The following subsections provide information on the structure and operation of this table.

7.1 Structure of the LOS Table

The LOS table was developed in accordance with Ontario Regulation 588/17, "Asset Management Planning for Municipal Infrastructure", made under the Infrastructure For Jobs and Prosperity Act, 2015. The table is organized into four primary components: Service Statements; Key Service Attributes; LOS Statements; and, Performance Measures. The structure of the table is as follows:

1. A ***Service Statement*** is listed above the table, which briefly describes the FM service that is being provided. This service statement is: "Efficiently providing safe, reliable and fuel-efficient vehicles at a cost affordable to the client".
2. ***Key Service Attributes*** is the first major column of the table. The column contains a list of Key Service Attributes, which are intended to cover all important aspects of the FM service in a way that is easily understandable and recognizable by the fleet customer. Each Key Service attribute consists of a phrase, which describes an important area of focus for the FM service. The Key Service Attributes are Cost Efficient, Safe, Quality, Reliable and Environmental Stewardship.
3. ***LOS Statement*** is the second major column of the table. The column contains a list of LOS Statements, corresponding to each Key Service Attribute. One, or multiple LOS statements may apply to each Key Service Attribute. Each LOS Statement is comprised of a short sentence, describing the outputs of the service category. Each LOS Statement should clearly state customer standards and be measurable. As an example, for the LOS Key Service Attribute, "Cost Efficient", the corresponding LOS Statement is "Providing fleet services in an efficient manner".
4. The remainder of the table is comprised of ***Performance Measures***. Performance measures identify specific areas of focus that can be measured to support each Key Service Attribute. Multiple performance measures can be listed for each Key Service Attribute. The LOS tables provide two types of Performance Measures: Customer and Technical. Each Performance Measure should be defined using the SMART acronym (specific, measurable, achievable, relevant, and time-bound). Each Performance Measure is further subdivided into four components, which are represented as additional columns in the LOS table. These components detail the Performance Measure, Current Performance, Data Source (that will be used to measure performance); and, Target.

7.2 UPDATING PERFORMANCE MEASURES AND REPORTING

As part of operationalizing Levels of Service, the Town will adopt an annual LOS metrics review and reporting exercise. As part of that review, current performances and performance targets should be assessed annually, and updated if needed. The procedure for annually updating performances and performance targets is as follows:

- Amalgamate annual updated data;
- Perform LOS analysis;
- Update current performance and log past performance for each measure;
- Review performance targets; and,
- Report on LOS.

8. OPERATING COSTS

A detailed review of the Towns' approach to developing charge-out rates (and the associated impact on the operating budget of each user group) was completed as part of developing this CFMS. The following points summarize this review:

- The process to establish the charge-out rate is following general best practices, accounting for the full costs associated with the operations, maintenance and capital cost recovery of the asset. This full cost recovery approach ensures that the operating budget of each user group is fully funding the costs to provide the fleet assets that support the provision of front-line services.
- The information used in the charge-out rate calculation is a combination of data from the Town's financial system and assumptions based on professional judgement from FM experts.

The recommendations provided in this CFMS will put the Town on a pathway to leverage data from a FM system that tracks all maintenance and operational in future updates to the charge-out rate calculations. This data will be combined with an understanding of current service levels being provided by front-line staff to find opportunities to reduce costs while maintain service levels, or to understand the full cost of provided higher service levels.

9. IMPLEMENTATION PLAN

The Implementation Plan provides a series of activities (projects, initiatives, etc.) that are designed to operationalize the concepts and recommendations provided in this CFMS. The completion of each of the activities listed will continually enhance the respective components of the Town's FM business, which over time will allow the Town to continually monitor, regulate and improve its FM business, and to achieve its broader corporate AM and organizational objectives. The implementation plan is provided in Appendix B.

All of the activities detailed in the implementation plan have two primary components. First, the activities consist of finite projects, intended to build a core or foundational component of the Town's AM System. Second, the activities will result in the implementation of an ongoing business process, which should be integrated into the Town's AM business processes required to ensure the continual operation of the Town's AM System.

The implementation plan provides the following information:

Project – details the recommended project.

Scope/Objectives – provides a brief description of the project, including the general scope of work and objectives.

Benefits – provides a brief description of the components of the project that will improve the Town's FM business practices.

Related Business Practices – details the category of the FM Business Process that relates to the recommended activity.

Priority – Details the priority of the activity. Priorities are also linked to criticality and urgency. High priority activities are also critical; and should be completed sooner, when compared to medium or low priority activities.

Project Start Date – indicates the recommended time to begin the project. Note that start dates are often linked to priority (i.e. criticality).

Implementation Timeline – indicates the estimated duration of the project.

Internal Resources – indicates the internal staff resource requirements within the Town (provided in number of hours) that will support the project.

Outsourcing Cost – indicates the estimated cost to engage outsourcing either to advance the existing processes or to implement foundational components of the respective project.

Dependent Activities – details other activities in the implementation plan that should be completed prior to the given activity.

Note that for each of the projects in the implementation plan, the potential for outsourcing is identified if an outsourcing cost is detailed. Outsourcing can be necessary to leverage external resources when resource requirements are higher than can be accommodated by internal staff. Furthermore, outsourcing can help to complete projects in a timely manner. Outsourcing can also provide the Town with access to AM expertise that can bring perspectives from other municipalities and can provide the resources required without the cost of long term staff positions. It should be noted that the extent to which any project is outsourced can vary depending on the scope of the project and the Town's internal capacity to support smaller/larger portions of each project. The Town should review the scope of each project at the time the terms of reference are developed to determine more specific outsourcing requirements.

The implementation plan has also identified internal staff resource requirements for each project, provided as a number of hours. These values represent the resource requirements to implement the project. It is important to note that the recommendations do not necessarily represent a need for net new resources. Resource requirements should be considered and reviewed with senior staff to determine if new resources are needed, or if the work can be accommodated with the existing Town staff resources.

10. CLOSING REMARKS

This Corporate Fleet Management Strategy (CFMS) puts the Town on the pathway to deliver FM services in a manner that aligns with the Town's strategic objectives. It builds upon current resources to work toward an approach where data-driven service levels are used to eliminate redundancies and bring efficiencies to the management of a growing fleet portfolio.

This CFMS has been developed to provide the specific approaches that the Town will enact with respect to FM. The approaches are in alignment with the objectives of the Town's AM Policy to ultimately link infrastructure decisions to the Town's overall vision and goals. The scope of the Strategy pertains to all groups, departments and divisions in the Town that use or manage fleet assets.

The strategy details the Town's FM Business Process, which is comprised of four (4) major business categories:

1. Procurement.
2. Operations.
3. Maintenance.
4. Disposal/Replacement.

The strategy provides eleven (11) recommendations to further FM business processes in each of these categories. It also provides organizational recommendations to achieve the implementation of this strategy, which consist of centralizing its current FM practices under the FM fsection and expanding the role of the fleet supervisor position to have the *responsibilities and authority* to execute the elements of this CFMS.

The strategic recommendations informed the development of a comprehensive Level of Service (LOS) Framework for the service of FM, which is documented in Appendix A. As part of this CFMS, an implementation plan was produced (documented in Appendix B), which provides a series of project (activities, initiatives, etc.) to operationalize this strategy within the Town.

APPENDIX A:
LEVEL OF SERVICE TABLE

Fleet Asset Levels of Service Table

Service Area: Fleet Management
Service Statement: Efficiently providing safe, reliable, and fuel efficient vehicles at a cost affordable to the client.

Key Service Attribute	LOS Statement	Customer/Council Focused Performance Measures			Technical Focused Performance Measures			
		Performance Measure	Data Source	Target	Performance Measure	Current Performance	Data Source	Target
Cost Efficient	Providing fleet services in an efficient manner	Annual cost to provide service ($/km)	Financial Analysis	TBD	Operating budget for fleet services	TBD	Financial Analysis	TBD
					Cost per km ($/km)	TBD	Financial Analysis	TBD
					Cost per hour ($/hr)	TBD	Financial Analysis	
					% of vehicles not recovering 100% of replacement cost between recovery and salvage	TBD	Financial Analysis	TBD
					10 Year average fleet asset renewal budget as a % of replacement value	TBD	Financial Analysis	TBD
Safe	Providing safe vehicles and equipment	% of fleet assets that meet legislated safety standards	Work Management System	TBD	% of regulated MTO maintenance inspections completed	TBD	Work Management System	100%
Quality	Providing fleet services at the appropriate quality	% of fleet assets that meet the quality targets of the user group	Service Level Agreements	TBD	% of vehicles that meet or exceed the target design standard	TBD	Service Level Agreements	TBD
					# of vehciles not meeting Town cleanliness objectives	TBD	Work Management System	TBD
					# of complaints due to physical condition of vehicles	TBD	Work Management System	TBD
Reliable	Providing reliable vehicles and equipment	% of time the appropriate number of vehicles are ready for use by a service group	Work Management System	TBD	% of vehicles and equipment past their optimum service life	TBD	Asset Inventory	TBD
					Number of vehicles being replaced early due to rust/corrosion, physical condition.	TBD	Asset Inventory	TBD
					# of failures by failure type	TBD	Work Management System	TBD
					% of non-critical preventative maintenance activities completed on time	TBD	Work Management System	TBD
					% of critical preventative maintenance activities completed on time	TBD	Work Management System	TBD
					% of uptime by vehicle class	TBD	Work Management System	TBD
					Ratio of Reactive vs. Preventative Maintenance	TBD	Work Management System	TBD
					Asset Classes with Appropriate Spare Ratios	TBD	Asset Inventory	TBD
Environmental Stewardship	Providing vehicles & equipment with minimal greenhouse gas emissions	Annual greenhouse gas emissions and fuel consumption	Work Management System	TBD	Total fuel consumption per year (L/100 km)	TBD	Work Management System	TBD
					% of vehicles above target idle time	TBD	Work Management System	TBD
					# of vehicles with above typical fuel consumption	TBD	Work Management System	TBD

	Foundational Metrics
	Advanced Metrics

APPENDIX B:
IMPLEMENTATION PLAN

Table B-1. Implementation Plan

	Project	Scope/Objectives	Benefits	Related Business Practices	Priority	Project Start Date	Project Duration	Internal Resources (hours)	Outsourcing Cost (if applicable)	Dependent Projects
1	Refine and Operationalize LOS	Establish LOS to document and manage FM business practices. Operationalize LOS by collecting appropriate data, and implementing annual review/updating.	Documents FM strategic elements. Enables fact/evidence-based decision making. Provides framework to measure, practice and continually improve FM.	All	High	Ongoing	Continuous Improvement	N/A	N/A	N/A
2	Centralize fleet management practices under the fleet management section.	Expand the current fleet management section to support all municipal fleet activities, as detailed in Section 6 of the CFMS. Entrust the Fleet Supervisor with the responsibilities and authority to execute the elements of the CFMS.	Creates efficiencies in FM service Standardizes FM operations Operationalizes FM strategy	All	High	Immediate	2 years	750 - 1,000	N/A	N/A
3	Develop Fleet Asset Inventories	Create detailed asset inventories for all fleet assets, using PW inventories as a model. Capture additional attribute information as needed. Create data standard.	Provides framework for asset data collection Standardizes inventory across all fleet assets Activates data-driven FM strategies.	All	High	Immediate	4 to 6 months	200	$25,000	N/A
4	Implement CMMS	Develop CMMS Implementation strategy (define needs, develop implementation plan) Procure and implement CMMS software Provide staff training to operationalize CMMS	Provides efficiencies in operations and maintenance business process Provides data management strategy and practice to activate advanced FM practices, standardizes data being collected against assets	All	High	Immediate	2 to 3 years	2500	$125,000 to $175,000	N/A
5	Create Service Level Agreements	Create service level agreements between the fleet department and other organizations/departments (ex. internal departments and HHCEC) applying to shared areas of business, including procurement, sharing of services, etc.	Increases efficiency of FM operation, by teaming with HHCEC Increases service delivery by leveraging HHCEC resources and needs Documents clearly expectations of business units for fleet assets.	Procurement Operations Maintenance	Medium	Medium-term (2+ years)	4 to 6 months (initial) Continuous Improvement (as needed to update)	200	$25,000	2
6	Develop and enhance charge-out model for all rolling stock	Analyze all costs associated with rolling stock using existing available data Continually improve and enhance model with additional data when available	Increases efficiency and cost recovery	Operations	Medium	Medium-term (2+ years)	4 to 6 months	200	$25,000	4, 5
7	Implement Advanced Procurement Strategies	Implementation of: Operator and management feedback forms to inform procurement Develop procurement scoring methodology/matrix	Creates efficiencies in procurement & incorporates user feedback early in procurement lifecycle Optimizes procurement process Reduces overall costs of procurement	Procurement	Medium	Medium-term (2+ years)	4 to 6 months	120	N/A	2, 3, 4
8	Implement Advanced Environmental Strategies	Implement Anti-idling Policy Develop driver environmental training program Monitor and report on fuel usage	Creates efficiencies Alignment with organizational objectives through environmental stewardship	Operations	Low	Long-term (2 to 5 years)	4 to 6 months	120	N/A	2, 3, 4
9	Develop Formal Maintenance Management Strategy	Standardize and define maintenance activities Provide appropriate maintenance training in alignment with CFMS and AM objectives Provide appropriate training associated with CMMS, to obtain appropriate data required to implement CFMS Develop maintenance priroity matrix Incorporate preventative maintenance IDs into CMMS for all vehicles	Develops framework to activate advanced maintenance strategies, and data strategies Ensures assets are being effectively maintained and warranty is valid Optimizes vehicle maintenance & replacement process	Maintenance	Medium	Medium-term (2+ years)	1 year	200	$50,000 to $100,000	2, 3, 4
10	Implement Advanced Disposal/Replacement Strategies	Implement optimum service life analysis Formally define and track vehicle spare ratios	Creates efficiencies in disposal/replacement Optimizes disposal/replacement process Reduces overall costs of disposal/replacement	Disposal/Replacement	Low	Long-term (2 to 5 years)	4 to 6 months	120	N/A	2, 3, 4

TOWN OF HALTON HILLS
Working Together Working for You!

REPORT

REPORT TO: Chair and Members of the Planning, Public Works and Transportation Committee

REPORT FROM: Melissa Ricci, Senior Planner- Policy

DATE: September 4, 2019

REPORT NO.: PLS-2019-0043

RE: Terms of Reference Glen Williams Scoped Secondary Plan Review

RECOMMENDATION:

THAT Report PLS-2019-0043 dated September 4, 2019, with respect to the Terms of Reference for the Glen Williams Scoped Secondary Plan Review, be received;

AND FURTHER THAT the Terms of Reference (attached as Schedule 1 to this report) for the proposed Glen Williams Scoped Secondary Plan Review be approved;

AND FURTHER THAT the Manager of Purchasing be authorized to release a Request for Proposal in keeping with the Terms of Reference as described in this report;

AND FURTHER THAT a Project Steering Committee be established to provide input into the Glen Williams Scoped Secondary Plan Review comprised of Members of Council, Town staff from Planning, Engineering and Parks and Recreation and three interested residents/landowners of Glen Williams including representatives from the Hamlet of Glen Williams Residents Association Inc. (HGWRA).

AND FURTHER THAT a Glen Williams Scoped Secondary Plan Review project web page be created to communicate the study deliverables, opportunities for community engagement and progress of the study to the public;

AND FURTHER THAT a copy of this report be forwarded to the Region of Halton for information.

BACKGROUND:

Through Report P&I-2017-0066 in June 2017, Council approved the Glen Williams Work Plan comprised of two distinct phases. Phase 1 – the Glen Williams Mature Neighbourhood Study was recently completed with the adoption of OPA 34 and the related implementing Zoning By-law 2019-0018. Phase 2 was identified as a scoped review of the Secondary Plan and targeted for initiation in 2019. This Report presents the Terms of Reference prepared to initiate Phase 2 of the Glen Williams Work Plan.

Purpose of the Review

The Hamlet of Glen Williams Secondary Plan preceded a number of Provincial and Regional plans which have revised policy directions for growth and development in Ontario. In addition, Town staff and the Hamlet of Glen Williams Residents Association Inc. have identified a number of issues that require further review and consideration. A scoped review of the Hamlet of Glen Williams Secondary Plan is timely, and will enable the Town to appropriately respond to these planning considerations. The Review will ensure:

- Conformity to Provincial and Regional Plans.
- Confirmation that the goals and objectives of the Secondary Plan remain relevant.
- That Hamlet Design policies and guidelines are updated to reflect best practices that are sensitive to the community context, including best practices for the design of stormwater management ponds to minimize impacts on adjacent Neighbourhoods.
- That natural heritage and environmental policies are updated to conform to provincial and regional policy while acknowledging the existing community context of Glen Williams (e.g., a Hamlet that provides a transition between the Georgetown Urban Area and the surrounding agricultural and rural landscape).

Other key items that will be considered through this review include parkland and trail policies, the Hamlet buffer policy framework, and transportation issues such as community core parking requirements and associated pedestrian flow, and student access to the Glen Williams Public School.

The Review will be a community-integrated process that is shaped by input from the public and key stakeholders, as defined in Section 4.4 (Consultation Strategy) of the Terms of Reference attached to this report as Schedule 1.

The Hamlet of Glen Williams Scoped Secondary Plan Review is to be completed within 18 months of approval of the Terms of Reference, within a budget of one hundred thousand dollars ($100,000), which has been approved by Council in the capital budget.

RELATIONSHIP TO STRATEGIC PLAN:

The Strategic Plan sets the Corporate Mission, Strategic Directions and Goals of the Town. The purpose of the Glen Williams Scoped Secondary Plan Review relates to the following Strategic Directions:

- Preserve, Protect and Enhance our Countryside
- Provide Responsive, Effective Municipal Government

Preserve, Protect and Enhance our Countryside

Objectives E1 (a) and E.2 (b) of the Strategic Plan directly indicate the need to actively participate in the statutory review of Provincial Plans and update the Glen Williams Secondary Plan respectively.

Provide Responsive, Effective Municipal Government

Objective I of the Strategic Plan speaks about initiating dedicated community consultations on issues of significant importance to communities-of-interest or the public at large. The Glen Williams Scoped Secondary Plan Review will include a review of planning issues that have been raised by the community in consultation with the Glen Williams Community Association including Hamlet buffers, transportation issues, parkland and trail policies, and potential community core parking requirements.

FINANCIAL IMPACT:

As noted earlier in this report, through the 2015-2019 Capital Budget process, Council approved the development of a scoped review of the Glen Williams Secondary Plan. A total budget of $100,000 has been set aside to cover the costs associated with completion of this study, identified by Project No. 7100-22-1502.

CONSULTATION:

In preparing the draft Terms of Reference, Planning staff has consulted with the Senior Management Team and the Hamlet of Glen Williams Residents Association Inc. (HGWRA). Two meetings with the HGWRA were held in the summer to discuss their comments and incorporate their feedback into the Terms of Reference.

Staff will continue to work with the HCWRA through the Secondary Plan Review. Staff will also continue to update Council as to the progress of the study.

PUBLIC ENGAGEMENT:

Ongoing Consultation will be conducted with interested residents and other key-stakeholders via Steering Committee Meetings, Public Open Houses and online engagement. The Study follows the Mayor's Public Engagement Charter which is built on three pillars; Transparency, Notification, and Participation.

SUSTAINABILITY IMPLICATIONS:

This report supports the Environmental Health and Social Well-Being pillars of sustainability. This is accomplished by reviewing the Glen Williams Scoped Secondary Plan to ensure conformity to the Provincial and Regional Plans and by working with the Glen Williams residents to address relevant issues and concerns in the community. This will help ensure that residents feel welcomed, safe, connected, respected and actively engaged in Halton Hills.

Overall, the alignment of this report with the Community Sustainability Strategy is: Good

COMMUNICATIONS IMPACT:

Public consultation has been conducted with the Hamlet of Glen Williams Residents Association Inc. (HGWRA) through the development of the Terms of Reference. If the proposed Terms of Reference for the Scoped Secondary Plan is approved, a Project Steering Committee would be established to form a key component of the community engagement for this study. Staff recommends a project specific web page be created and that the "Let's Talk Halton Hills" community engagement platform be utilized throughout the project lifecycle to share information about the project and gather feedback from the community.

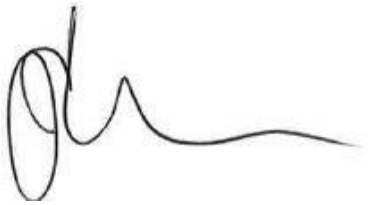
CONCLUSION:

Considering that the Glen Williams Work Plan was approved in 2017 with the intent to begin the Secondary Plan Review in 2019, once Council approves the Terms of Reference appended to this report, staff will immediately begin the process of hiring a consulting team, establishing a Technical Advisory and a Steering Committee, and beginning Phase 1 of the Review.

Through the Secondary Plan Review, staff will provide regular updates to Council on the progress and the public consultation strategy.

Reviewed and Approved by,

Bronwyn Parker, Manager of Planning Policy



John Linhardt, Commissioner of Planning and Sustainability

Brent Marshall, Chief Administrative Officer

Hamlet of Glen Williams Scoped Secondary Plan Review Terms of Reference

4.0 Project Terms of Reference

4.1 Project Summary

The Town of Halton Hills requires the services of a qualified consultant to prepare the Glen Williams Scoped Secondary Plan Review. The Hamlet of Glen Williams is located directly north of Georgetown in the Town of Halton Hills.

The existing Secondary Plan for the Hamlet of Glen Williams was adopted by the Town of Halton Hills Council on July 7, 2003 and approved by the Region of Halton on July 29, 2005. However, the Secondary Plan only came into full force and effect in 2007, once all appeals were settled at the Ontario Municipal Board.

The planning horizon for the existing Glen Williams Secondary Plan is 2021. A planned population of approximately 2,000 persons for the Hamlet was established based on a limited amount of growth. This will maintain the Hamlet's scale and character without exceeding the 2,600 population equivalent that the Region had reserved in the Georgetown Wastewater Treatment Plant for the three Hamlets of Glen Williams, Norval and Stewarttown. Growth was to be largely accommodated on six development sites by way of the plan of subdivision (see Appendix B). To date, only one of the six developments (Intracorp – 91 lots) is fully built out. The Eden Oak-Creditview subdivision was draft approved by the Ontario Municipal Board in 2017, and is in the process of working to clear the various agencies' (e.g. Town departments, Region departments) conditions to receive final approval. The other sites are the subject of applications that are either currently in process or have proceeded to the pre-consultation stage.

In June 2017, Council approved a Glen Williams Work Plan comprised of two distinct phases. Phase 1 – the Glen Williams Mature Neighbourhood Study - was recently completed with the adoption of OPA 34 and the related implementing Zoning By-law 2019-0018. Phase 2 – was identified as a scoped review of the Secondary Plan and targeted for initiation in 2019.

4.1.1 Scope and Objectives of the Secondary Plan Review

The Hamlet of Glen Williams Secondary Plan preceded a number of provincial and regional plans, which have revised policy directions for growth and development in Ontario.
In addition, Town staff and the Glen Williams Community Association (i.e. GWCA-HGWRA) have identified a number of local issues that require further review and consideration as part of this Review. A scoped review of the Hamlet of Glen Williams Secondary Plan is timely and will enable the Town to appropriately respond to these planning considerations. The Scoped Secondary Plan Review will ensure:

- Conformity to Provincial and Regional Plans

- Confirmation that the goals and objectives of the Secondary Plan remain relevant
- That Hamlet Design policies and guidelines are updated to reflect best practices which are sensitive to the community context, including best practices for the design of stormwater management ponds to minimize impacts on adjacent Neighbourghoods
- That natural heritage and environmental policies are updated to conform to provincial and regional policy while acknowledging the existing community context of Glen Williams (e.g., a Hamlet that provides transition between the Georgetown Urban Area and the Surrounding agricultural and rural landscape).

The Secondary Plan must:

- Articulate the vision for the Hamlet of Glen Williams
- Define the Town's intended policy direction for residential, commercial, institutional, recreational and natural areas within the Hamlet
- Ensure that the natural, cultural, and heritage character of the Hamlet is retained and enhanced
- Ensure the character of the various neighbourhoods in the Hamlet is enhanced and retained.

The community has raised a number of traffic concerns particularly related to speeding and cut-through traffic. The Town completed a detailed Transportation Study in 2009 and implementation is ongoing as projects are identified in the capital forecast. Other initiatives such as the update to the Transportation Master Plan (TMP), which is to begin in 2020, will consider broader traffic flow concerns. For the purpose of the Secondary Plan Review, the Project Consultant will complete a scoped review of the recommendations listed in the detailed Transportation Study (2009) and identify the initiatives that have been implemented and those that are still pending. The review will identify additional transportation policies which could be included in the secondary plan to address the main concerns identified in the Transportation Study final report. In addition, the Project consultant will consider the following issues:

- Community core parking requirements and associated pedestrian flow
- Student access to the Glen Williams Public School

Other key items that will be considered through this review include an examination of the Hamlet buffer policy framework and an evaluation of parkland, trails and usable open space to ensure connectivity of areas of the Hamlet.

At the end of the Review through a recommendations report, the Project Consultant will identify additional policies and procedures of other Town Departments that need to be modified to implement the Secondary Plan.

The review will be a community-integrated process that is shaped by input from the public and key stakeholders, as defined in Section 4.4 (Consultation Strategy).

4.1.2 Study Area

The 367-hectare study area is reflective of the existing boundary of the Hamlet of Glen Williams (see appendix A).

The varied topography and natural heritage in and around the hamlet of Glen Williams are some of its most noticeable and valued characteristics. A flood plain runs through the heart of the hamlet following the line of the Credit River. The Greenbelt surrounds the hamlet apart from a small area to the south west which borders Georgetown.

4.2 Study Approach and Timelines

The Hamlet of Glen Williams Secondary Plan Review will be completed between fall of 2019 and spring of 2021. The Study will be defined by the following key phases:

Phase 1: Background and Policy Options (fall 2019 – winter 2020)

Phase 1 involves a comprehensive background and policy options review, which includes an analysis of the current policy context of the Secondary Plan and identified issues of local concern. The framework of provincial, regional, and local planning policy is inclusive of, but not limited to:

- Provincial Policy Framework
  - The Greenbelt Plan 2017
  - A Place to Grow (Growth Plan for the Greater Golden Horseshoe - 2019)
  - The Provincial Policy Statement 2014
- Regional Policy Framework
  - Halton Region Official Plan ROPA 38
- Municipal Policy Framework
  - The Town of Halton Hills Official Plan Consolidated in 2017,
  - The Hamlet of Glen Williams Secondary Plan 2007 (including Hamlet Design and Heritage Protection Guidelines and Terms of Reference for Environmental Implementation Reports)
  - The Glen Williams Traffic Study-Final Report (2009)
  - Green Development Standards, 2014 (currently being updated)
  - The Town of Halton Hills Transportation Master Plan 2011
  - The Town of Halton Hills Recreation and Parks Strategic Action Plan 2007 (currently being updated)
  - The Town of Halton Hills Cycling Master Plan 2010
  - The Glen Williams Mature Neighbourhood Study
  - The Town of Halton Hills Comprehensive Zoning By-law 2010-0050
  - Imagine Halton Hills 2013 (Integrated Community Sustainability Strategy)
  - The Town of Halton Hills Strategic Plan
  - The Town of Halton Hills Private Tree Management Strategy (currently being developed)
    The Town of Halton Hills Active Transportation Master Plan(currently being developed)
  - The Town of Halton Hills Climate Emergency Resolution 2019
- Other Agencies
  - Credit Valley Conservation policies, regulations, and mapping (including Subwatershed Studies 11, 12, and 14)

The review of the Background and Policy Options will culminate in a Draft Background and Policy Options Report, which:

- Identifies and analyzes provincial, regional, and local planning policies pertinent to the Hamlet of Glen Williams
- Discusses implications of the policy framework on the Glen Williams Secondary Plan
- Identifies objectives, policies, schedules, or appendices of the existing Secondary Plan that require revision in order to conform to the policy framework
- Recommends revisions to the existing Secondary Plan in response to provincial, regional, or local policy direction. The Draft Background and Policy Options Report will be presented to the Technical Advisory and Steering Committees, and any subsequent revisions or recommendations will be addressed or accommodated in a Final Report

Deliverables:

Deliverables required in Phase 1 of the Secondary

Plan Review include:

- Attending a kickoff meeting with the Planning Management Team to discuss the Project goals, milestones and introduce the consulting team
- Preparing a Public Engagement and Consultation Plan
- Creation of Draft Background and Policy Options Report. Two revisions of the report will be required: revision one considering Planning Staff comments, and a final iteration capturing comments from the Technical Advisory Committee and Steering Committee
- Presentation of Draft Background and Policy Options Report to the Technical Advisory Committee
- Presentation of Draft Background and Policy Options Report to the Steering Committee
- Creation of Final Background and Policy Options Report
- Attending approximately two (2) coordination meetings in person or via conference call with the Project Manager to review the scope and required timelines.

Phase 2: Community Vision (winter – spring 2020)

Reflecting on the Final Background and Policy Options Report of Phase 1, Phase 2 involves the engagement of the Glen Williams community. The Final Background and Policy Options Report will be presented to the public at a Public Open House, which will be the first community engagement event of the Secondary Plan Review and provide residents and stakeholders with an opportunity to be engaged in the Review process. The intent of the Public Open House is to collect community input on the vision for the Secondary Plan, within the defined policy framework.

All input received at the Public Open House will be included in a Public Consultation Report– Community Vision, which:

- Summarizes and categorizes public comments and feedback into an issues matrix
- Analyzes comments and feedback, and identifies major themes
- Indicates which of the above issues and themes are subject to provincial, regional, and local policy directions
- Addresses questions and concerns of residents and stakeholders
- Recommends revisions to the existing Secondary Plan in response to public input

Deliverables:

Deliverables required in Phase 2 of the Secondary Plan Review include:

- Facilitation of Public Open House;
- Presentation of Final Background and Policy Options Report at Public Open House
- Creation of Public Consultation Report– Community Vision
- Attending approximately two (2) coordination meetings in person or via conference call with the Project Manager to review the project scope and required timelines

Phase 3: Policy Formulation (summer – fall 2020)

Guided by the Final Background and Policy Options Report of Phase 1 and the Public Consultation Report– Community Vision of Phase 2, Phase 3 involves the revision of the existing Secondary Plan, in the culmination of a Draft Hamlet of Glen Williams Secondary Plan, which:

- Integrates necessary revisions to the vision and objectives as recommended by the Final Background and Policy Options Report and the Public Consultation Report– Community Vision
- Integrates necessary revisions to the direction, intent, and implementation of

policies as recommended by the Final Background and Policy Options Report and the Public Consultation Report– Community Vision
- Integrates necessary revisions to the schedules and appendices of the existing Secondary Plan as recommended by the Final Background and Policy Options Report and the Public Consultation Report– Community Vision

The Draft Hamlet of Glen Williams Secondary Plan will be presented to the Technical Advisory and Steering Committees, and any subsequent revisions or recommendations will be addressed.

Once revised, the Draft Hamlet of Glen Williams Secondary Plan will be presented to Town of Halton Hills Council, in order to seek authorization for the formal release of the Plan for public comment.

Once approval has been granted by Town Council, the Draft Hamlet of Glen Williams Secondary Plan will be presented to the public at a second Public Open House in order to verify findings and recommendations, and collect community input.

All input received at the Public Open House will be included in a Public Consultation Report– Policy Formulation, which:

- Summarizes and categorizes public comments and feedback into an issues matrix
- Analyzes comments and feedback, and identifies major themes
- Indicates which of the above issues and themes are subject to provincial, regional, and local policy directions
- Addresses questions and concerns of residents and stakeholders
- Recommends detailed revisions to the Draft Hamlet of Glen Williams Secondary Plan

Deliverables:

Deliverables required in Phase 3 of the Secondary Plan Review include:

- Creation of Draft Hamlet of Glen Williams Secondary Plan. Three revisions of the Draft Hamlet of Glen Williams Secondary Plan will be required: revision one capturing the comments of Planning Staff, revision two considering comments from the Technical Advisory Committee and Steering Committee and a final iteration capturing the comments recorded in the Public Consultation Report
- Presentation of Draft Hamlet of Glen Williams Secondary Plan to Technical Advisory Committee
- Presentation of Draft Hamlet of Glen Williams Secondary Plan to Steering Committee
- Presentation of Draft Hamlet of Glen Williams Secondary Plan to Town Council
- Facilitation of Public Open House;
- Presentation of Draft Hamlet of Glen Williams Secondary Plan at Public Open House
- Attending approximately two (2) coordination meetings in person or via conference call with the Project Manager to review the scope and required timelines

Phase 4: Recommendation (winter – spring 2021)

Continuing with the Draft Hamlet of Glen Williams Secondary Plan and Public Consultation Report– Policy Formulation of Phase 3, Phase 4 involves final policy revision in the culmination of the Final Hamlet of Glen Williams Secondary Plan, which:

- Integrates detailed revisions to the vision and objectives as recommended

by the Public Consultation Report– Policy Formulation
- Integrates detailed revisions to the direction, intent, and implementation of policies as recommended by the Public Consultation Report– Policy Formulation
- Integrates detailed revisions to the schedules and appendices of the existing Secondary Plan as recommended by the Public Consultation Report– Policy Formulation

Once revised, the Final Hamlet of Glen Williams Secondary Plan will be presented to the public at a Statutory Public Meeting, as mandated by the Planning Act. All input received at the Statutory Public Meeting will be included in a Statutory Public Meeting Report.

The Final Hamlet of Glen Williams Secondary Plan and Statutory Public Meeting Report will be presented to the Town of Halton Hills Council, in order to seek adoption of the Plan.

Deliverables:

Deliverables required in Phase 4 of the Secondary Plan Review include:

- Creation of Final Hamlet of Glen Williams Secondary Plan. Two revisions of the Final Hamlet of Glen Williams Secondary Plan will be required capturing the comments of Planning Staff and a final iteration capturing the comments from the Statutory Public Meeting
- Presentation of Final Hamlet of Glen Williams Secondary Plan at Statutory Public Meeting
- Creation of Statutory Public Meeting Report
- Presentation of Final Hamlet of Glen Williams Secondary Plan and Statutory Public Meeting Report to Town Council
- Attending approximately two (2) coordination meetings in person or via conference call with the Project Manager to review the scope and required timelines

4.3 Consultation Strategy

The Hamlet of Glen Williams Secondary Plan Review will be a highly consultative process that is guided by advisory committees and community engagement. This consultative approach will assist Town staff in the research and evaluation of social, economic, environmental, and cultural issues pertinent to the Secondary Plan, and recommendation of effective and equitable solutions.

4.3.1 Committees

The Secondary Plan Review will be guided by a Technical Advisory Committee and a Steering Committee. The role of these committees is to provide comments and data input during the study process, assist with the identification and resolution of issues, and liaise with respective organizations to ensure consistent and accurate input.

The Technical Advisory Committee will be comprised of key representatives of:

- Pertinent Town of Halton Hills departments
- The Region of Halton
- Credit Valley Conservation
- Other public agencies, as determined appropriate

The Steering Committee will be comprised of selected members of:

- Town of Halton Hills Council
- Town of Halton Hills Advisory Committees
- Town of Halton Hills Staff
- Region of Halton Staff
- Glen Williams Community Association (GWCA-HGWRA) representatives, Local

residents, landowners, and business owners.

The respective committees will meet on a regular basis to monitor progress throughout the Secondary Plan Review as indicated under each of the Project Phases identified under Section 4.2 - Study Approach and Timelines.

4.3.2 Community Engagement

Community engagement and public and stakeholder participation will form a large component of the Scoped Secondary Plan Review.

Stakeholders to be involved in the Review include:

- The Glen Williams Community Association (GWCA-HGWRA),residents, land owners and businesses owners within the study area
- Appropriate Town of Halton Hills Advisory Committees
- Credit Valley Conservation;
- The Region of Halton
- Town of Halton Hills staff
- Town of Halton Hills Council

The Scoped Secondary Plan Review will combine formal and informal consultation. Formal community engagement will occur throughout the Review process as specified under the Project Phases identified in Section 4.2-Study Approach and Timelines.

Informal community engagement will be conducted by Town staff, consisting of individual stakeholder meetings as requested and online engagement opportunities using Let's Talk Halton Hills, the Town's online engagement platform. A project information page on the Town website will also be created to ensure that information on the Study is widely available and to advertise opportunities to participate through the Secondary Plan Review process.

4.4 Accountabilities

Under direction of the Manager of Planning Policy, a Senior Policy Planner will manage, coordinate, and supervise the Hamlet of Glen Williams Scoped Secondary Plan Review, with the responsibility of:

- Ensuring compliance with the Terms of Reference
- Ensuring financial resources are well managed
- Securing and providing existing information to the consultant;
- Ensuring participation and co-ordination of all stakeholders;
- Coordinating and conducting individual stakeholder meetings
- Coordinating a Technical Advisory Committee
- Coordinating a Steering Committee;
- Serving as Chair of Technical Advisory and Steering Committees
- Liaising with Technical Advisory and Steering Committees
- Coordinating the community engagement program and events;
- Coordinating any other pertinent studies
- Coordinating all project communications
- Meeting regularly with the consultant;
- Answering all consultant questions;
- Approving in-progress deliverables submitted by the consultant
- Updating the project information page on the Town website and coordinating online consultation activities on Let's Talk Halton
- Preparing and submitting status and staff reports to the Planning, Public Works and Transportation Committee and Council

The consulting team's Project Manager will manage, coordinate, and supervise the Hamlet of Glen Williams Scoped Secondary Plan Review technical work, with the responsibility of:

- Ensuring compliance with the Terms of Reference
- Ensuring financial resources are well managed

- Overall supervision of project activities including public consultations as required
- Coordinating deliverables with other technical experts from the consulting team
- Ensuring that quality control is completed on all deliverables
- Delivering reports and other project activities on time

4.5 Digital Information

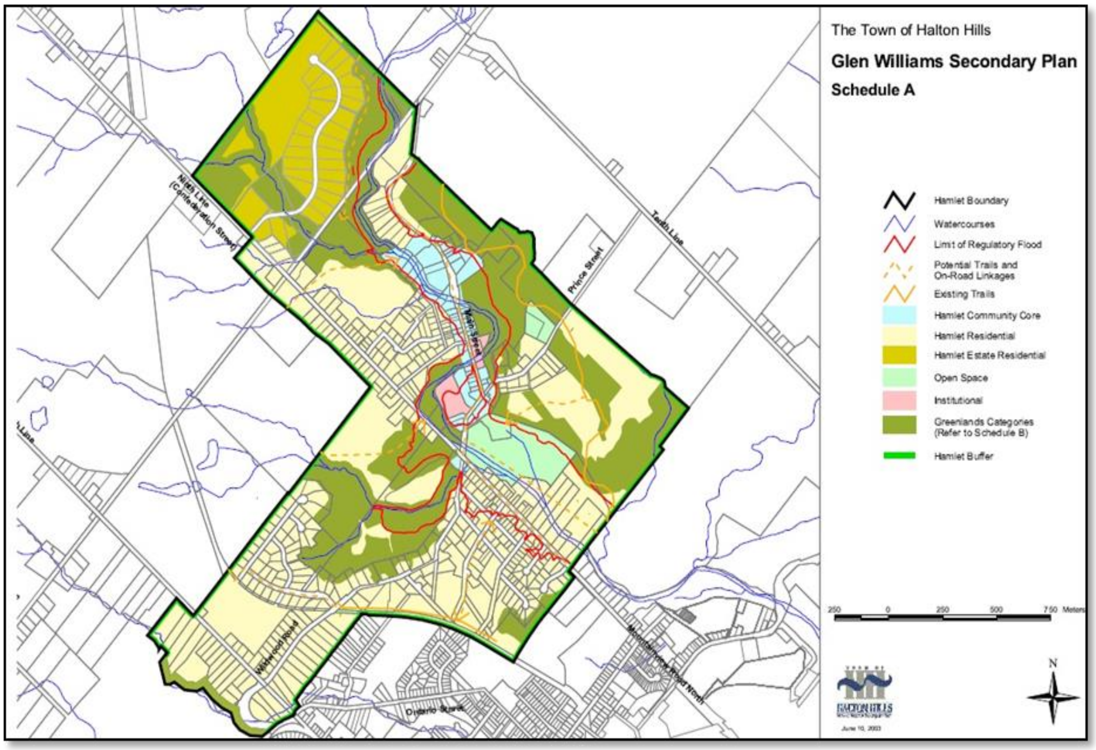
All digital information required as part of this review is to be provided in accordance with the following:

- Data, sketches, drawings and reports generated by the Project Consultant for the purpose of this study shall become the property of the Town of Halton Hills
- Digital copies of the written reports are to be provided in both MS Word 2010 (or any other original format) and PDF format

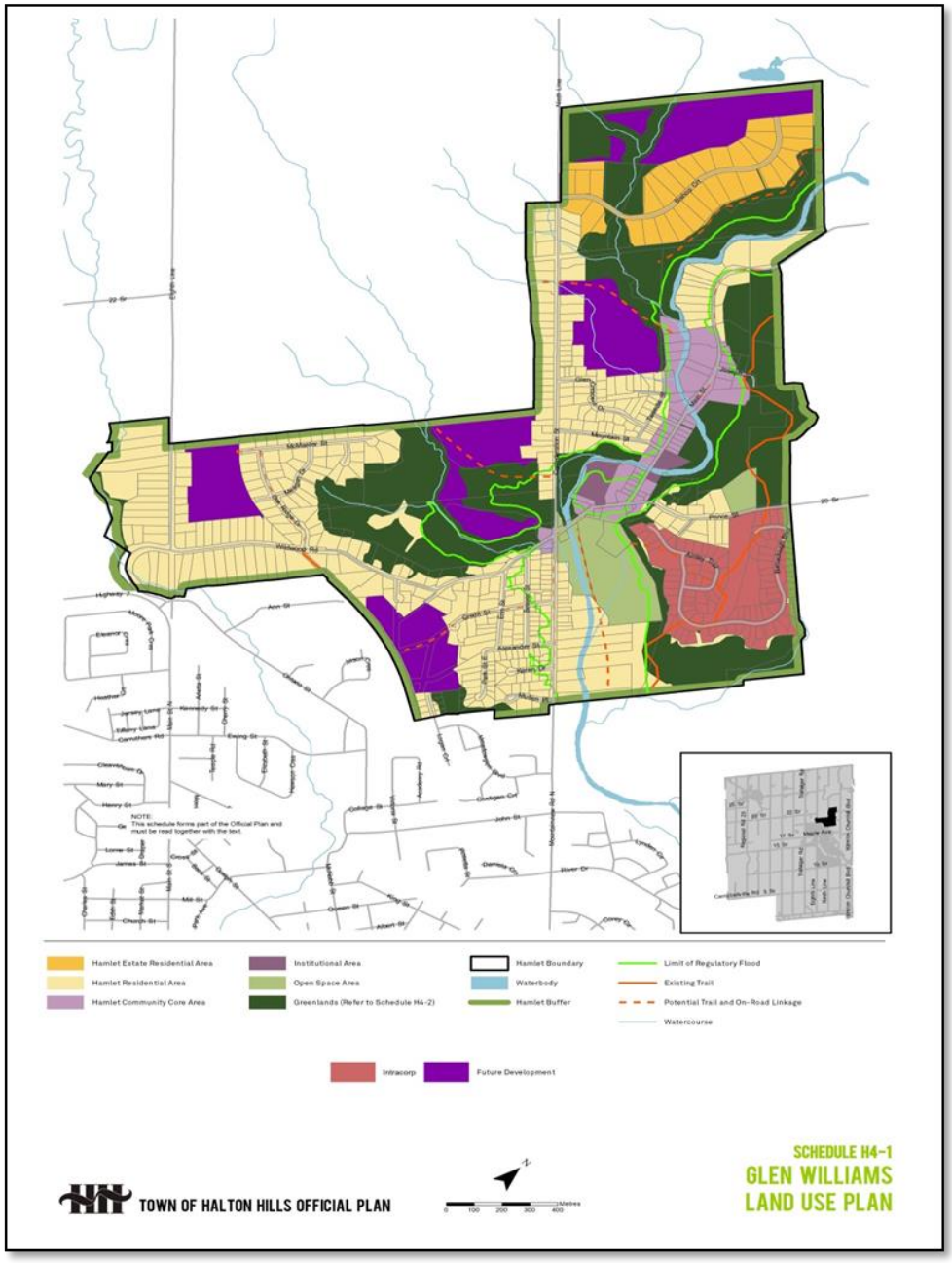
4.6 Budget

The Hamlet of Glen Williams Secondary Plan Review is to be completed within 18 months of approval of the Terms of Reference, within a budget of ninety-five thousand ($95,000).

Appendix A


The Town of Halton Hills
Glen Williams Secondary Plan
Schedule A
Hamlet Boundary
Watercourses
Limit of Regulatory Flood
Potential Trails and On-Road Linkages
Existing Trails
Hamlet Community Core
Hamlet Residential
Hamlet Estate Residential
Open Space
Institutional
Greenlands Categories (Refer to Schedule B)
Hamlet Buffer
Tenth Line
Prince Street
Main Street
Ontario Street
250 0 250 500 750 Meters
N

Appendix B


Hamlet Estate Residential Area
Hamlet Residential Area
Hamlet Community Core Area
Institutional Area
Open Space Area
Greenlands (Refer to Schedule H4-2)
Hamlet Boundary
Waterbody
Hamlet Buffer
Limit of Regulatory Flood
Existing Trail
Potential Trail and On-Road Linkage
Watercourse
Intracorp
Future Development
TOWN OF HALTON HILLS OFFICIAL PLAN
SCHEDULE H4-1
GLEN WILLIAMS
LAND USE PLAN

TOWN OF HALTON HILLS
Working Together Working for You!

REPORT

REPORT TO: Chair and Members of Planning, Public Works & Transportation Committee

REPORT FROM: Michael Dean, Senior Sustainability Planner & Energy Coordinator

DATE: September 20, 2019

REPORT NO.: PLS- 2019- 0067

RE: 2020 Corporate Energy Plan Update Final Draft Report

RECOMMENDATION:

THAT Report No. PLS – 2019 – 0067, dated September 20, regarding the 2019 Corporate Energy Consumption and Activities Report and the 2020-2025 Corporate Energy Plan, be received;

AND FURTHER THAT the 2019 Corporate Energy Consumption and Activities Report and the 2020-2025 Corporate Energy Plan, attached under separate cover to Report No. PLS – 2019 – 0067, be approved;

AND FURTHER THAT Town staff be directed to submit the 2019 Corporate Energy Consumption and Activities Report and the 2020-2025 Corporate Energy Plan and the data to the Province and make it publically available, as per the *Electricity Act;*

AND FURTHER THAT the resources required to successfully implement the 2020-2025 Corporate Energy Plan on an on-going basis, be brought forward and considered as part of the annual capital and operating budgeting process.

BACKGROUND:

As detailed in Report No. PLS-2019-0002 (dated January 16, 2019) which was approved by Council on February 5, 2019, an update to the 2014 Corporate Energy Plan was undertaken in 2019 in order to fulfill the requirements of the *Electricity Act* and Milestones 4 and 5 of the Partners for Climate Protection Program. This update was to include two sections: a report on the current condition of energy management at the

Town and an updated plan of action for the 5 year period from 2020-2025. These sections are presented here as two separate documents:

1. The 2019 Corporate Energy Consumption and Activities Report
2. The 2020-2025 Corporate Energy Plan (CEP)

COMMENTS:

The 2020 Corporate Energy Plan Update includes two sections: the 2019 Corporate Energy Consumption and Activities Report which describes the current state of energy management in Halton Hills and the outcome of the 2014 Corporate Energy Plan, and; the 2020-2025 Corporate Energy Plan which provides a roadmap for reducing energy consumption, utility costs, and greenhouse gas emissions over the next five years. Both sections are provided as attachments to this report, and are summarized below.

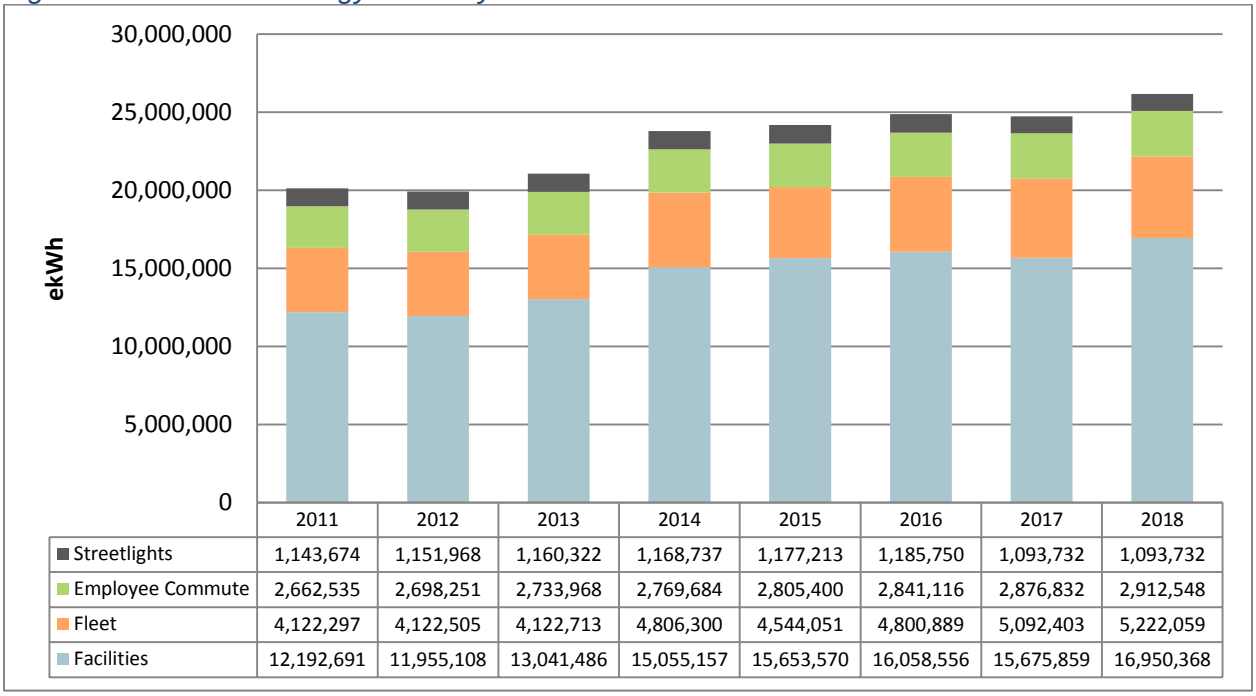
1. The 2019 Corporate Energy Consumption and Activities Report

The 2019 Corporate Energy Consumption and Activities Report provides a summary of the Town's 2018 annual energy consumption, GHG emissions, and all energy costs associated with the Town's operations. Key highlights include:

- **The Town consumed just over 26 million "equivalent" kilowatt-hours (ekWh) of energy in 2018**, an increase 6.1 million ekWh, or a 30% increase from 2011.
- **Total energy cost increased by approximately $909,000, a 70% increase compared to 2011.** During this period increases in electricity, natural gas, and diesel prices have been slightly offset by a reduction in the price of gasoline.
- **Efficiency measures have saved the Town approximately $171,000 per year in energy costs.** If Town facilities currently operated at the energy intensities of 2011, the Town would spend an additional $171,000 on energy per year.
- **Despite significant increases in energy consumption, energy-related greenhouse gas emissions in 2018 were only 8% percent higher in 2018 than 2011**. This was a result of a combination of the energy efficiency measures implemented by the Town and the Provincial phase out of coal power generation.
- **If emissions offsets associated with renewable energy projects on Town facilities are included the Town's emissions are 4% lower than they were in 2011.** Additional actions will have to be undertaken in order to ensure that the Town meets it emissions targets in the future.

In the period from 2011-2018 there has been a 30% increase in total energy consumption (see Figure 1). This growth has been primarily driven by significant increases in the size of major Town facilities during this period.

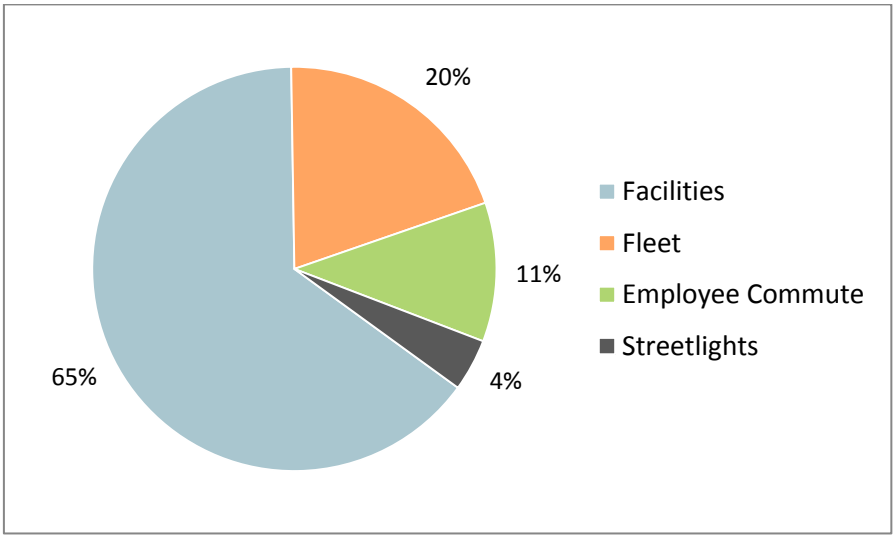
Figure 1. 2011-2018 Energy Trend by Sector

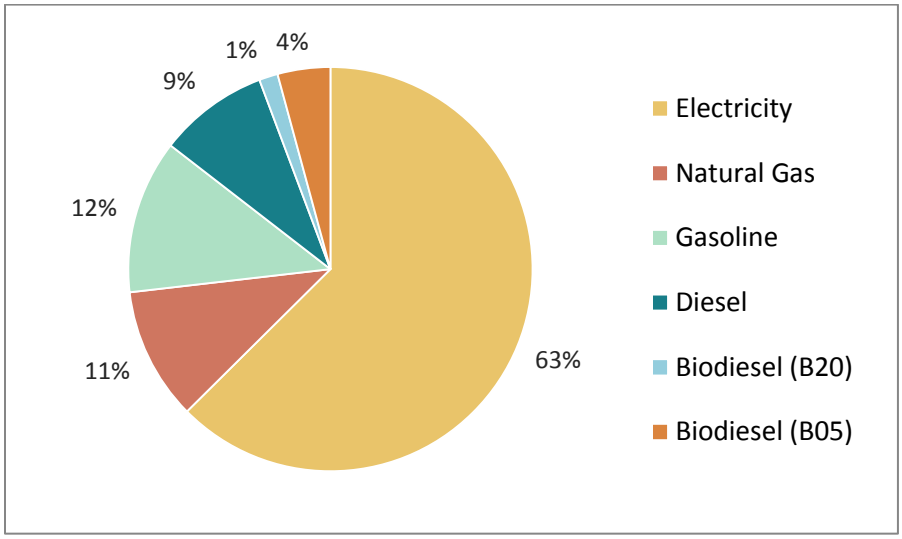


	2011	2012	2013	2014	2015	2016	2017	2018
Streetlights	1,143,674	1,151,968	1,160,322	1,168,737	1,177,213	1,185,750	1,093,732	1,093,732
Employee Commute	2,662,535	2,698,251	2,733,968	2,769,684	2,805,400	2,841,116	2,876,832	2,912,548
Fleet	4,122,297	4,122,505	4,122,713	4,806,300	4,544,051	4,800,889	5,092,403	5,222,059
Facilities	12,192,691	11,955,108	13,041,486	15,055,157	15,653,570	16,058,556	15,675,859	16,950,368

The Town spends just over $2.2 million per year on energy. Despite being only 33% of energy use, electricity makes up 63% of energy costs (see Figure 2). Because natural gas has remained relatively inexpensive, it is the lowest cost energy source at present. The new federal carbon pricing system, introduced on April 1st, 2019 should lead to increases in the price of natural gas, diesel, and gasoline, while electricity will be less heavily impacted due to the low-carbon nature of the Ontario electricity grid.

Figure 2. 2018 Energy Cost by Sector and Commodity





Annual emissions associated with Town operations have increased by 8% during the period from 2011-2018, from 3,600 tCO_2e to 3,890 tCO_2e – an increase of 290 tCO_2e. Despite significantly increased energy use, emissions associated with Town facilities have increased by only 3% during this time – this is, in large part, due to the impact of the provincial coal phase out on emissions associated with the electricity grid, without which emissions in facilities would have increased by just over 30%.

In addition, significant additions to the Town's facility portfolio were offset by much more efficient construction and the implementation of energy efficiency measures. For example, the Robert C. Austin Operations Centre and Acton Arena respectively consume 37% and 29% less energy per unit of floor space compared to 2011. If the energy intensity of Town facilities was the same as in 2011, the Town would currently use 4 million more ekWh per year, or a 45% increase in energy use between 2011-2018.

Through the local distribution company, Halton Hills Hydro, the Town has installed three solar arrays on Town facilities (Mold-Masters SportsPlex, Acton Arena, and the Robert C. Austin Operations Centre). Because these panels generate carbon neutral energy during the day, when average carbon intensity for the Ontario grid is highest, they offset emissions at a higher rate than the grid average tCO_2e/kWh. As a result, they reduce emissions associated with energy production by approximately 427 tCO_2e per year. If these offsets are considered as part of the emissions reductions from Town activities, the Town has reduced emissions by 4% from 2011 levels. Figure 3 shows the trajectory of Town emissions over the 2011-2018 period with and without offsets from renewable energy generation. The reductions associated with energy efficient new construction, efficiency retrofits, and renewable energy projects are summarized in Table 1 below.

Figure 3. Emissions trend 2011-2018 with Renewable Energy Offsets

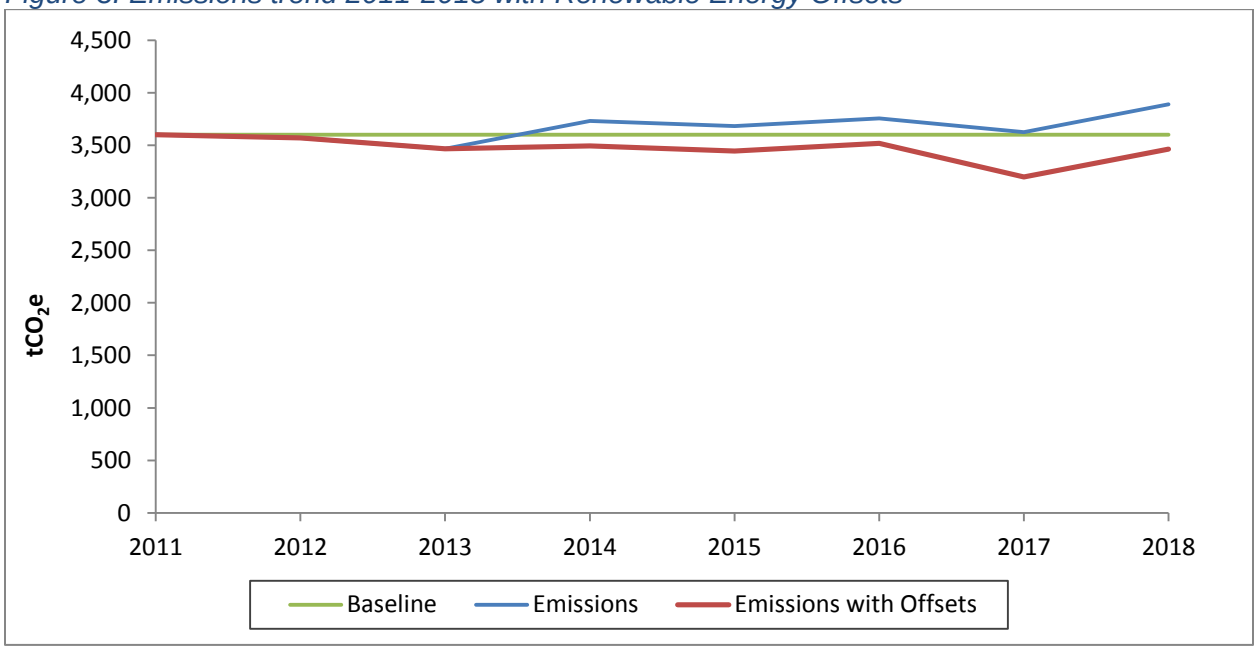


Table 1. Energy use reduction, emissions reduction, and utility cost avoidance by action type

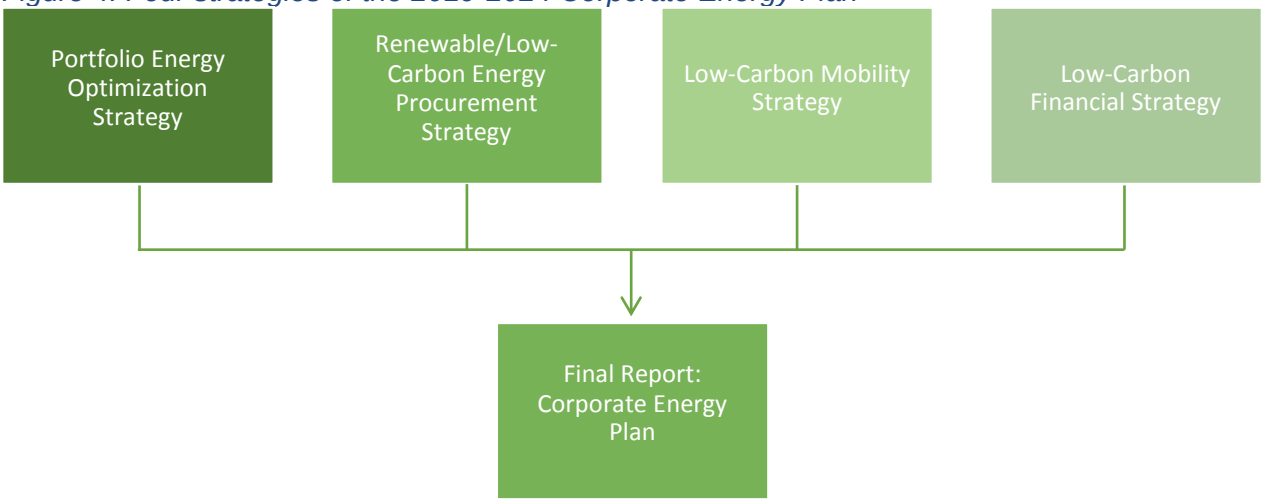
Action Type	Energy (ekWh)	Emissions (tCO2e)	Cost ($)
Energy Efficient New Construction	-2,480,025	-37	-48,192
Efficiency measures in existing buildings	-390,077	-398	-130,144
Renewable energy projects	-1,212,160	-478	na
Total	**-4,082,262**	**-913**	**-178,337**

2. 2020-2025 Corporate Energy Plan

This 2020-2025 Corporate Energy Plan (the Plan) constitutes the Town's second ECDM plan. It updates the 2014 Plan and reaffirms the Town's commitment to energy management and efficiency with an emphasis on deep greenhouse gas (GHG) emissions reductions. It reports on achievements to date and outlines the approach to managing energy in Town facilities over the next five years. As set out in Figure 4, the 2020-2025 Plan goes beyond the regulatory requirement in outlining the approach to achieving a low-carbon vision by developing four connected foundational strategies:

1. Portfolio Energy Optimization to minimize facility energy consumption while upgrading buildings and maintaining or improving occupant comfort;
2. Renewable/Low-Carbon Energy Procurement to increase the Town's use of renewable energy;
3. Low-Carbon Mobility to address emissions resulting from the Town's vehicle fleet and employee commuting; and
4. Low-Carbon Financial Strategy aimed at developing a comprehensive funding approach to fully enable the Plan's implementation.

Figure 4. Four strategies of the 2019-2024 Corporate Energy Plan



2.1 Recommendations

The approach of the 2020-2025 Corporate Energy Plan can be summarized in the following key recommendations:

- Take a systematic, evidence-based approach to developing low-carbon facilities, operations and organizational capacity. Develop low-carbon standards, practices and management systems through currently planned capital projects and targeted high-potential retrofits before committing to major capital investments.
- Focus first on understanding and making the most of existing facilities and operations. Testing and analysis of individual building systems, effective

documentation, staff training, and performance-based service contracts can bring them to optimal performance and keep them running efficiently in future. Applying this approach to ventilation, ice plants and other systems is recommended as part of the Corporate Asset Management Program.

- Continue and conclude the investigation into the operation of the Town's 4 existing geothermal installations to get them operating at their full potential while informing the Town standard for future installations as an essential element of the carbon reduction goal.
- Halton Hills has an exemplary Corporate Asset Management Program that takes a whole lifecycle approach to realizing value in each of the Town's service areas. Integration of low-carbon considerations and procedures is recommended, particularly during the Needs Identification and Assessment stage and in monitoring performance and costs throughout the physical asset life cycle from initial planning to final disposal.
- New buildings and major renovations should be designed for climate change adaptation and a low-carbon future, taking into consideration:
    a. High-performance energy efficiency and net-zero carbon design and operations
    b. Renewable energy
    c. Low-carbon transportation opportunities
    d. Climate resilience and survivability, including high-performance building envelopes, protecting or enhancing natural drainage systems, infrastructure (particularly water storage), flood defences and standalone energy supply based on renewables and bio-fuel generators
- Investment in upgrading existing facilities should prioritize those with high emissions reduction potential and returns on investment while extending the application of building automation technology and developing standardized approaches to operations and maintenance.
- Make the best use of the current fleet and resources by collecting data on current fleet practices. Prepare for technological advances in new vehicles and fleet management and expand electric vehicle adoption as these become available.

2.2 Capital Investments and Savings

The Plan presents a three-part approach to the progression towards the goal of deep reductions in carbon emissions. The first part is investment in energy efficiency retrofits and operational improvements to corporate facilities which provides a good return on investment. As detailed in Section 3, the Plan proposes an investment of $2,676,000 in energy efficiency upgrades to Town facilities over the 5-year period, including addition of building automation technology across all buildings. This investment would be offset by over $250,000 in forecast utility company incentives (rebates). When the measures

are fully implemented, the reduced energy and water consumption will generate utility cost savings estimated at more than $400,000 per year at current rates (see Table 2).

Table 2 Summary of recommended energy efficiency measures by measure type

Measure type	Estimated Cost ($)	Electricity Savings (kWh/year)	Gas Savings (m3/year)	Estimated Savings ($/year)	Incentives ($)	Payback (years)	GHG emissions reduction (tonnes CO2e)
Lighting	353,387	340,669	0	57,914	34,067	5.5	7
HVAC & Controls Retrofits	2,082,243	1,277,223	258,688	283,947	179,460	6.8	521
Operations	110,478	175,200	102,499	56,259	38,020	1.3	200
Building Envelope	105,728	64,366	14,068	14,576	9,250	6.6	28
Training	24,000	0	0	0	0	0	0
TOTAL	**2,675,836**	**1,857,459**	**375,255**	**412,696**	**260,797**	**6.4**	**756**

Second, all new buildings, major renovations and equipment replacements should be planned and implemented to achieve low or no-carbon performance. The Town's Corporate Asset Management program and sustainable building policies will support comprehensive high-performance, low-carbon targets and design, with every capital project subject to these requirements. Additional time and capital to incorporate low carbon design will be included in each project. The proposed retrofit of Gellert Community Centre is an ideal pilot for developing and testing the overall approach, applied to the whole facility, not just the expansion, to create integrated low-carbon design and operations. Similarly, the fleet management strategy will progressively incorporate carbon reduction practices and programs to support low-carbon vehicles, operations and commuting.

The third part of the overall strategy is proactive, long-term investment in geothermal, advanced heat recovery, and renewable energy installations designed to minimize natural gas consumption and associated emissions. Section 4 of the CEP provides details of this approach. Where such investments do not yet meet the Town's economic criteria, capital renewal and replacement projects should be designed to be ready for future installations as technology continues to advance and economics improve. Grants from senior levels of government will be pursued to help fund these projects.

In order to fully fund the plan, the Town should establish a Green Revolving Fund (GRF) as a means of establishing a predictable and accountable financing source for implementation of the Plan. The GRF also has benefits of positive public perception while driving the early realization of the greatest utility cost savings, alternative funding sources and rigorous monitoring of ongoing performance and savings. The GRF will require dedicated staff time to manage the accounting, communicate results and also actively search and apply for additional sources of funding such grants and incentives. The GRF should scale up over time, allowing staff to develop management and monitoring processes and become familiar with the opportunities and challenges.

Further details on establishing a Green Revolving Fund are provided in Appendix G of the CEP.

2.3 Management and Organizational Alignment

The transition to a low-carbon future affects every aspect of society – how we live, what we buy, how we move around, the decisions we make every day. For the Town of Halton Hills, this transition will build on a well-established foundation of effective management and a deep commitment to sustainability. In addition to rethinking how buildings work, integrating new technology, and changing the purchasing criteria for vehicles, equipment and products, a successful transition will require additional alignment of management systems and processes and organizational capacity-building.

2.3.1 Corporate Asset Management Program

The Town's sector-leading Corporate Asset Management program provides the management platform for ensuring that Town assets meet the minimum low-carbon requirements throughout their lifecycle, from planning and acquisition through operations and maintenance to end-of-life decommissioning and disposal. As outlined in Section 6 of the CEP, the Needs Assessment project review will also include fuel efficiency, furthering low-carbon readiness and meeting low-carbon goals. The lifecycle assessment approach already integrated in the program is a pivotal component of success of low-carbon strategies.

2.3.2 Corporate Sustainable Building Policy and Green Development Standard

The Town's Corporate Sustainable Building Policy provides guidance on new municipal building design and construction. It should incorporate low-carbon energy and mobility considerations including heat recovery, geothermal, renewable energy generation (solar readiness at minimum), and EV parking and charging station requirements.

Low-carbon considerations should also be incorporated in the Green Development Standard, which guides the construction of all buildings within the Town of Halton Hills. As the Green Development Standard is to be updated starting in 2019, it would be efficient to have it also apply to public and municipal new building design. Municipal buildings could be subject to mandatory requirements, particularly in relation to lifecycle costs, high efficiency and low-carbon energy and mobility considerations.

2.3.3 New Construction and Capital Improvements

As outlined in Section 6 of the CEP, an integrated design process is a collaborative process bringing together designers, architects, engineers, building managers, operators and users to ensure all design, construction, operation and use considerations over the lifetime of the building are taken into account. Beginning this process early will define the requirements for the Low-Carbon Design Brief that guides the desired end point.

2.3.4 Performance Monitoring and Reporting

The Town is already using energy data to report on energy performance and meet regularly through Corporate Energy Team meetings to review performance. This reporting, together with additional data that is recommended to be collected, will inform progress towards low-carbon goals. A review of reporting should be included in the Corporate Energy Team meetings to ensure continuous improvement.

2.3.5 Staff Training and Support

Enhancing staff capability in energy management and building automation will be achieved by defining job-specific expectations, providing on-the-job training opportunities and working with service providers to provide necessary training and support.

2.3.6 Procurement

Energy and emissions performance is substantially dependent on the products and services of external providers, and some modified procurement practices will help to obtain high-performance outcomes. Some new processes are recommended which rely on continuity and consistency, including major system testing and additional building automation. These require architects, engineers and contractors who are experienced in and have proven track records with the low-carbon design methods, systems and equipment required to meet the goals.

2.3.7 Occupant Engagement

Staff and visitors play a significant role in the energy performance of Town facilities and the Town's overall environmental footprint. The Town has an opportunity to clearly communicate their goals, why they are important to all parties and how everyone can play their part in meeting them.

RELATIONSHIP TO STRATEGIC PLAN:

Sustainability is one of the Council priorities identified in the Town's Strategic Action Plan. The completion of the CEP will better enable the Town to fulfill its many sustainability objectives, including those directly related to energy.

FINANCIAL IMPACT:

Implementation of the CEP will involve significant new capital investments as outlined in this report and the attached document. The energy efficiency measures recommended in the CEP call for $2.6 million in capital investments over the 2020-2025 period. Each recommended project will be assessed and included in the budget review process separately. These measures are anticipated to save the Town $412,696 annually in utility costs.

CONSULTATION:

As part of the Plan development process the Town convened a project management team and a steering committee. The steering committee was comprised of members of the existing Corporate Energy Management Team and other important stakeholders. This body met at key points throughout the development process to provide input, subject matter expertise and feedback.

In addition to bi-weekly project management meetings, consultation with department representatives gathered their input and advice. These focused, strategy-specific meetings included two with fleet operations, one with asset management and finance, and one with Halton Hills Hydro to discuss electric vehicle charging stations and other collaboration opportunities. A Corporate Energy Plan update workshop, which included the Corporate Energy Team as well as Corporate Services representatives, was held on June 18, 2019.

PUBLIC ENGAGEMENT:

Because it primarily addresses the Town's internal operations, no public engagement was undertaken as part of the development of this plan.

SUSTAINABILITY IMPLICATIONS:

The Town is committed to implementing our Community Sustainability Strategy, Imagine Halton Hills. Doing so will lead to a higher quality of life.

The recommendation outlined in this report advances the Strategy's implementation.

This report supports the environment and economy pillars of Sustainability and the alignment of this report with the Community Sustainability Strategy is excellent.

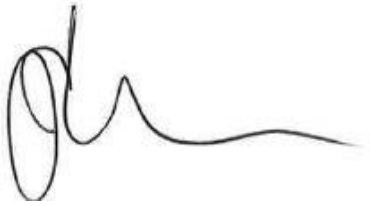
COMMUNICATIONS:

Both sections of the CEP, the 2019 Corporate Energy Consumption and Activities Report and the 2020-2024 Corporate Energy Plan will be made available to the public and staff through the Town's website. Specific projects recommended in the CEP may have additional communications requirements to be determined at a later date.

CONCLUSION:

Building on the Town's past successes and many existing efforts, the CEP is anticipated to realize improved efficiencies, utility cost savings, improved energy management, future cost avoidance, lower greenhouse gas emissions and continued municipal leadership. The Plan also positions the Town in compliance with the *Electricity Act* and completes the requirements of the Partners for Climate Protection program for corporate activities.

Reviewed and Approved by,



John Linhardt, Commissioner of Planning and Sustainability

Brent Marshall, Chief Administrative Officer

Town of Halton Hills

2019 Corporate Energy Consumption and Activities Report

July 2019

Contents

1. Background

The Town of Halton Hills Corporate Energy Plan was approved in 2014. The 2014 plan included estimates of energy consumption in the Town's facilities, and set an energy intensity reduction target of between 13-17% and an emissions reduction target of 20% from a 2011 baseline year. It was scheduled to be updated in 2019.

This report evaluates the implementation of the 2014 plan and updates the 2011 energy and emissions inventory in order to assess the Town's progress towards its energy and emissions targets. In addition, while the 2014 plan tracked energy and emissions sources covered by the reporting requirements contained in Ontario Regulation 397/11, the current report expands the scope of sources covered to include all significant energy uses (SEU) associated with the Town's operations.

The energy and emissions data covered here updates the Town's energy and emissions inventory with data for the years 2012-2018 and revises the energy and emissions data from the 2011 baseline to include the additional energy sources not covered in the initial plan and inventory. The energy uses covered in this report include all facilities which are "heated or cooled and the public agency is responsible for paying the utility bills" as required by the province's mandatory reporting. It also includes SEUs such as street lighting, fleet fuel use, and energy and emissions associated with employee commutes. All SEUs are then projected to 2030 based on two scenarios, a high-growth and a low-growth future.

This report also includes an assessment of the state of implementation of the 2014 plan. It includes a summary and update to information included in the Town's 2018 **80BY50 Report**, a survey of key stakeholders within the Town's operations that sought input on how energy management impacts their roles, and an estimate of the energy and emissions impacts of specific, quantifiable actions undertaken through the plan, and provides some context relating to significant developments within the Town's operations over the next 5 years that will impact energy and emissions during that period.

By updating the Town's energy and emissions inventory and evaluating the implementation of the 2014 plan, this report also serves to meet the requirements of Milestones 4 and 5 of the Partners for Climate Protection Program.

2. Corporate Energy Consumption Overview

The 2019 Corporate Energy Consumption and Activities Report provides a summary of the Town's 2018 annual energy consumption, GHG emissions, and all energy costs associated with the Town's operations. In addition to the report requirements mandated by the *Electricity Act*, information on all energy-consuming infrastructure (e.g., street lighting and sports fields) as well as fleet fuel has been included to provide a complete picture of energy needs for municipal operations. This report also includes modelled energy and emissions associated with employee

commutes; this is the only energy source that it not based on actual billed energy use, and as a result estimates have a higher level of uncertainty.

Key highlights include:

- **The Town consumed just over 26 million "equivalent" kilowatt-hours (ekWh) of energy in 2018**, an increase 6.1 million ekWh, or a 30% percent from 2011. However, during this time, Town facilities expanded significantly, while the energy intensity of Town facilities decreased.
- **Total energy cost increased by approximately $909,000 compared to 2011 a 70% increase.** During this period increases in electricity, natural gas and diesel prices have been slightly offset by a reduction in the price of gasoline.
- **Efficiency measures have saved the Town approximately $171,000 per year in energy costs.** If Town facilities currently operated at the energy intensities of 2011, the Town would spend an additional $171,000 on energy per year.
- **Despite significant increases in energy consumption, energy-related greenhouse gas emissions in 2018 were only 8% percent higher in 2018 than 2011**. This was a result of a combination of the energy efficiency measures implemented by the Town and the Provincial phase out of coal power generation.
- **If emissions offsets associated with renewable energy projects on Town facilities are included the Town's emissions are 4% lower than they were in 2011.** Additional actions will have to be undertaken in order to ensure that the Town meets it emissions targets in the future.

2.1 Methodology

Where possible, this report uses actual billed consumption to calculate all energy consumption and costs. The Town uses EnergyCAP energy management information system to track energy consumption in facilities using utility bills for Natural Gas and Electricity. Utility bills have also been used to track street and traffic lighting. Fleet fuel consumption is tracked separately by the Town – the Town is currently investigating implementing a fleet fuel tracking software to centralize this function.

Because it was not possible to acquire actual fuel consumption associated with employee commutes, energy and emissions for this sector was modelled using robust assumptions. Distances travelled were estimated using origin-destination data for all employees, and a 9L/100km average passenger vehicle fuel economy.

Energy cost estimates reflect actual billed rates, except for natural gas and electricity costs from years 2012-2014, which were estimated using Ontario Energy Board data on historical average energy rates. Gasoline and diesel prices for 2011-2012 were estimated using Government of Ontario's historical Fuel Price Survey data.[1]

[1] https://www.ontario.ca/data/fuels-price-survey-information

GHG estimates used in this report were derived from emissions coefficients in Environment Canada's 2018 National Inventory Report. Emissions estimates used in the 2011 inventory have been revised to reflect updated GHG intensity factors for the Ontario Grid.

3. Target and Goal Update

The 2014 Corporate Energy Plan was aligned with the Town's Integrated Community Sustainability Plan's goal to "foster a culture of conservation by preparing energy plans focusing on efficiency and renewable power generation" as well as existing initiatives like the Corporate Sustainable Building Policy.

The 2014 plan addressed energy use in Town buildings, technologies, and fleets – as well as people, processes, and information. The plan drew on information from three key sources: interviews, surveys, and meetings with Town staff; a review of Town policies, plans and programs; and a review of best practices in other jurisdictions. The first step in the process was to identify and define the preferred state/vision of energy management for the Town. This was accomplished through interviews with key Town staff and through two strategic planning sessions held with members of the Technical Advisory Committee and the Steering Committee. The second step involved defining the present state of energy use in the Town by reviewing the Town's energy management practices. The third step involved developing technical and organizational actions to assist the Town in moving from its present to its preferred state of energy management.

Technical actions were identified through ASHRAE Level 2 audits conducted on seven Town facilities of a variety of archetypes so that measures could be extrapolated across all Town buildings. The organizational actions, which relate to corporate processes, were identified through interviews, two strategic planning sessions, a corporate-wide survey, and a jurisdictional review of best practices.

The actions are grouped in the CEP according to the following categories:

- **Organizational commitment** – measures related to policies, targets, and resources required to enable energy management and the other actions;
- **Existing buildings and equipment** – measures, both technical and policy based, that impact existing buildings and equipment;
- **New buildings and equipment** – measures, both technical and policy based, that impact new buildings and equipment;
- **Monitoring and tracking** – measures related to evaluating, monitoring, and verifying energy data;
- **Communication and engagement** – measures related to encouraging behavioural modifications to save energy;
- **Fleets** – measures related to Town fleet vehicles that reduce energy consumption; and
- **Procurement and renewables** – measures related to the procurement of energy and renewable technologies.

The 2014 plan set the following goals:

- 13% to 17% improvement in energy intensity; and
- 16% to 20% reduction in greenhouse gas emissions.

Energy intensity at Town facilities has been reduced by 6%, which does not meet the 2014 intensity target range. The Town has not met the emissions reduction targets established in the 2014 plan, although the extent of the gap between current emissions and the target depends on what sources are included, as summarized below:

Table 1. CDM Plan Target Tracking

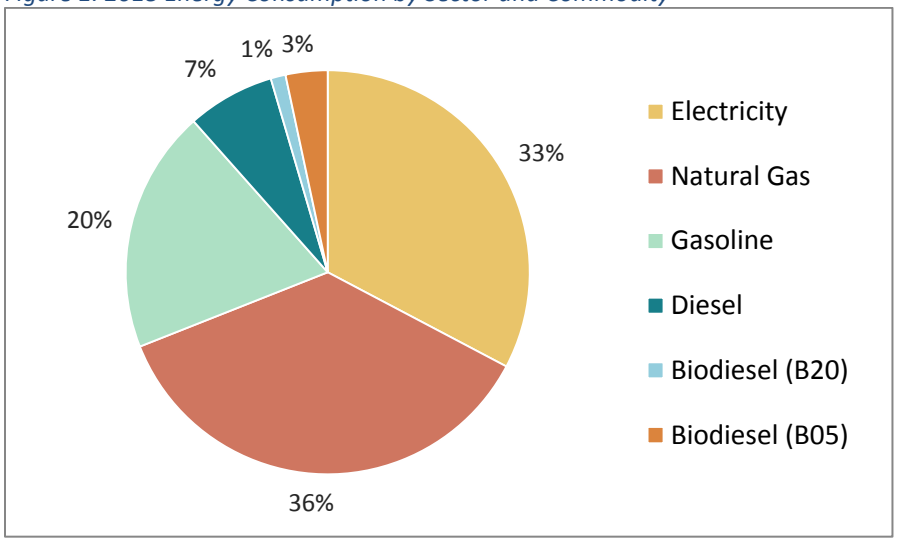
Performance Goal	Energy Intensity	GHG emissions
2014 Plan Target	Down by 13-17%	Down by 20%
2019 Outcome (Facilities only)	Down by 6%	Up by 3%
2019 Outcome (all sources)	NA	Up by 8%
2019 Outcome (all sources with offsets)	NA	Down by 4%

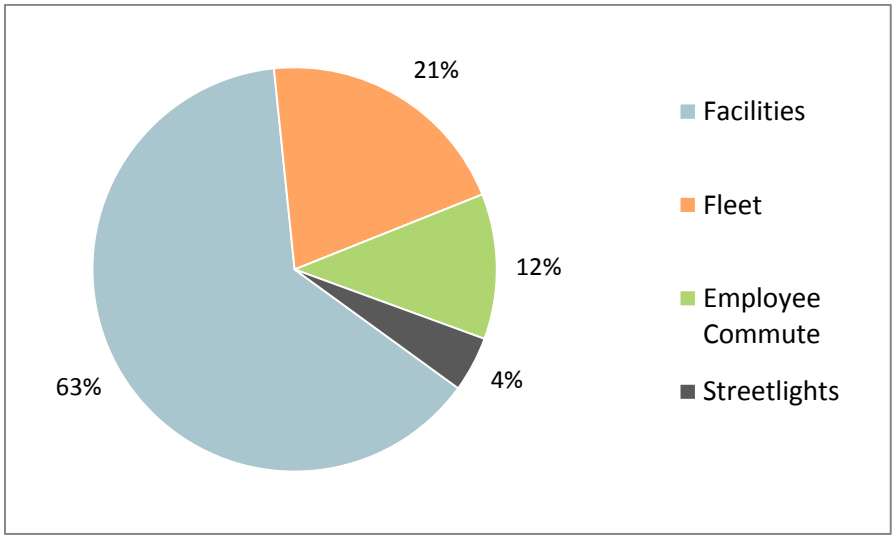
4. Updated Energy and Emissions Inventory

4.1 Corporate Energy Consumption

As described above, the updated energy and emissions inventory for the Town of Halton Hills has been expanded to track all significant energy uses, including the addition of streetlights, fleet, and employee commutes. Where possible these sources have been added to previous inventories using actual historical energy consumption data. Where actual consumption data was not available, previous years have been estimated using robust assumptions. The Town's energy consumption is primarily benchmarked against the 2011 baseline year.

Figure 1. 2018 Energy Consumption by Sector and Commodity





In 2017, facilities were 63% of total energy use, with fleet (21%) and employee commutes (12%) also constituting significant sources of energy use. Street lighting makes a relatively small portion of the total Town energy use at 4%.

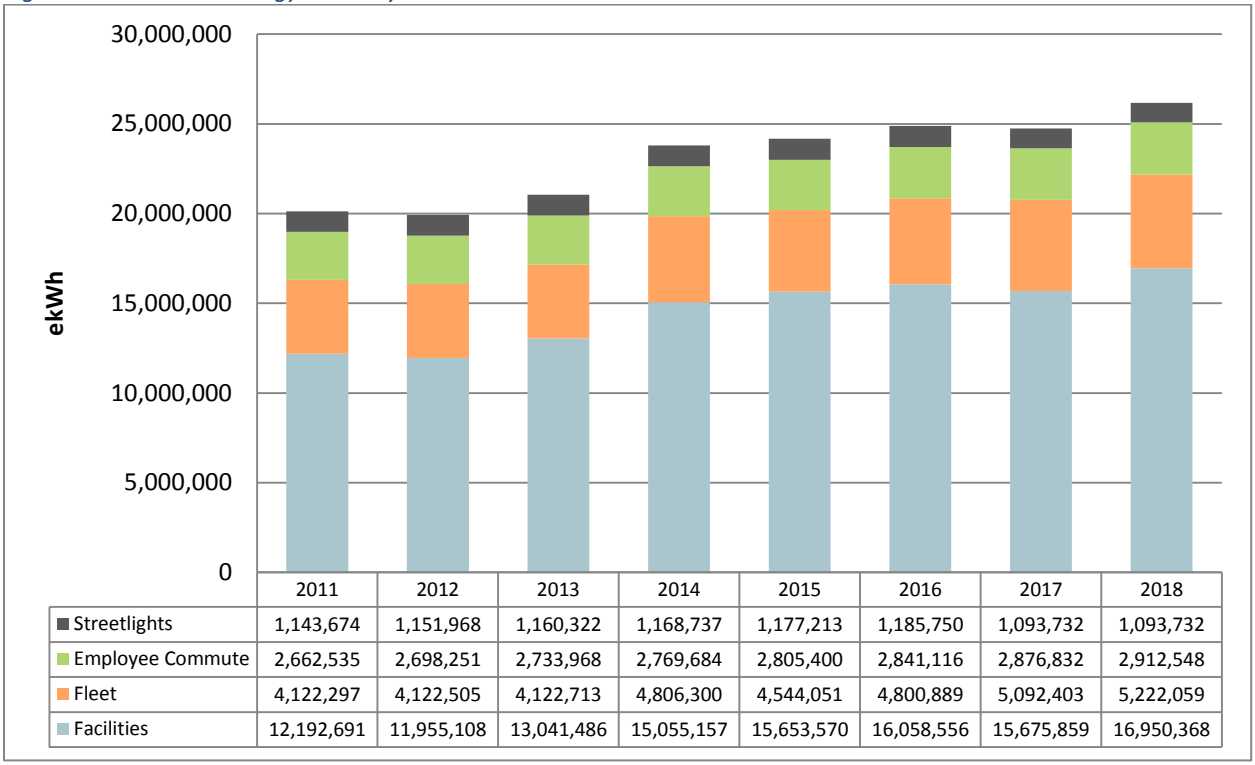
Table 2. Consumption by Sector Comparison 2011-2018 (ekWh)

Sector	2011	2018	Variance	% Change
Facilities	12,192,691	16,950,368	4,757,677	39%
Fleet	4,122,297	5,222,059	1,099,762	27%
Employee Commute	2,662,535	2,912,548	250,012	9%
Streetlights	1,143,674	1,093,732	-49,942	-4%
Total	**20,121,197**	**26,178,707**	**6,057,509**	**30%**

Table 3. Consumption by Commodity Comparison 2011-2018 (ekWh)

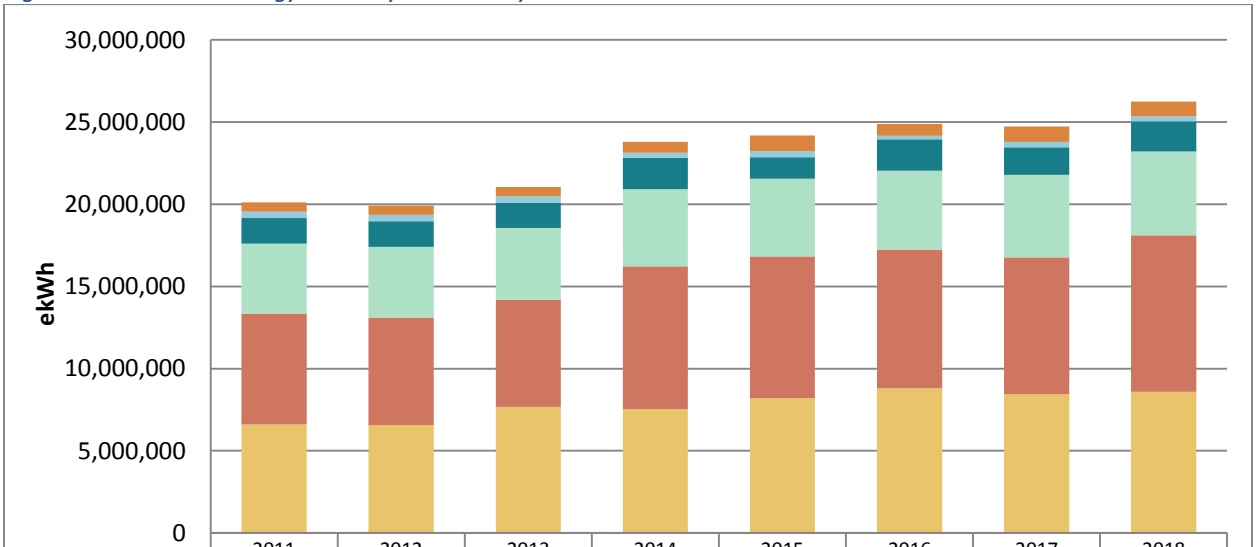
Commodity	2011	2018	Variance	% Change
Electricity	6,612,988	8,587,801	1,974,813	30%
Natural Gas	6,723,377	9,522,243	2,798,866	42%
Gasoline	4,278,337	5,100,962	822,625	19%
Diesel	1,547,192	1,839,690	292,499	19%
Biodiesel (B20)	392,453	313,022	-79,432	-20%
Biodiesel (B05)	566,851	880,932	314,082	55%
Total	20,121,197	26,244,651	**6,123,454**	**30%**

Figure 2. 2011-2018 Energy Trend by Sector



	2011	2012	2013	2014	2015	2016	2017	2018
Streetlights	1,143,674	1,151,968	1,160,322	1,168,737	1,177,213	1,185,750	1,093,732	1,093,732
Employee Commute	2,662,535	2,698,251	2,733,968	2,769,684	2,805,400	2,841,116	2,876,832	2,912,548
Fleet	4,122,297	4,122,505	4,122,713	4,806,300	4,544,051	4,800,889	5,092,403	5,222,059
Facilities	12,192,691	11,955,108	13,041,486	15,055,157	15,653,570	16,058,556	15,675,859	16,950,368

Figure 3. 2011-2018 Energy Trend by Commodity



	2011	2012	2013	2014	2015	2016	2017	2018
Biodiesel (B05)	566,851	566,851	566,851	658,062	955,018	719,660	936,810	880,932
Biodiesel (B20)	392,453	392,453	392,453	318,515	364,679	207,966	335,158	313,022
Diesel	1,547,192	1,547,307	1,547,423	1,906,902	1,309,632	1,920,306	1,678,176	1,839,690
Gasoline	4,278,337	4,314,145	4,349,954	4,692,505	4,720,122	4,794,072	5,019,091	5,100,962
Natural Gas	6,723,377	6,538,514	6,518,020	8,685,999	8,620,975	8,429,325	8,331,216	9,522,243
Electricity	6,612,988	6,568,562	7,683,788	7,537,895	8,209,808	8,814,981	8,438,375	8,587,801

In the period from 2011-2018 there has been a 30% increase in total energy consumption. This growth has been primarily driven by significant increases in the size of major Town facilities during this period. The five highest energy consuming buildings in the Town portfolio in both 2011 and 2018 were Mold-Masters SportsPlex, Acton Arena, Gellert Community Centre, Public Works Operations Centre, and the Town Hall; which make up 86% of the energy consumption associated with the Town's facilities. Of these facilities, the Robert C. Austin Operations Centre was completely rebuilt in 2015, with a 92% increase in floor space, a new ice pad was added to the Acton Arena in 2015, doubling the floor space, and the facility at Mold-Masters was more than doubled with two new ice pads added in 2012. This additional floor space in major energy using facilities has put significant upward pressure on the Town's energy consumption.

Nevertheless, energy increases associated with these significant additions to the Town's facility portfolio were offset by much more efficient construction and the implementation of energy efficiency measures. For example, the Robert C. Austin Operations Centre and Acton Arena respectively consume 37% and 29% less energy per unit of floor space compared to 2011. If energy intensity of Town facilities was the same as in 2011, the Town would currently use 2.87 million ekWh more per year, or a 45% increase in energy use between 2011-2018.

Table 4. 2018 Facility Energy Profile

Facility	Area (ft2)	Electricity (kWh)	Natural Gas (ekWh)	Total energy use (ekWh)	ekWh/ ft2
Mold-Masters SportsPlex	151,000	2,811,451	3,231,374	6,042,825	40.02
Gellert Community Centre	36,285	888,438	2,753,327	3,554,987	97.97
Acton Arena	92,000	1,284,171	1,507,718	2,791,889	30.35
Robert C. Austin Operations Centre	62,795	429,120	886,362	1,315,482	20.95
Town Hall	40,000	578,520	282,688	861,208	21.53
Halton Hills Cultural Centre and Library	50,500	709,560	33,658	743,218	14.72
District Two Station (Georgetown)	15,934	244,130	131,141	395,123	24.80
District One Station (Acton)	11,136	128,440	244,296	372,736	33.47
District Three Station - HHFD HQ	13,616	235,068	100,202	335,270	24.62
Cedarvale Community Centre	11,500	15,876	184,468	201,325	17.51
Acton Library Branch	9,000	118,784	20,264	139,048	15.45
Acton Yard - Equipment Depot	3,700	16,535	119,877	136,412	36.87
Prospect Park Pavilion	4,800	33,976	26,870	60,846	12.68
Total	**502,266**	**7,494,069**	**9,522,243**	**16,950,368**	**391**

In addition to these more efficient construction and operations practices in major facilities, there have been two significant additions to the Town's building portfolio. In 2011 the Town completed

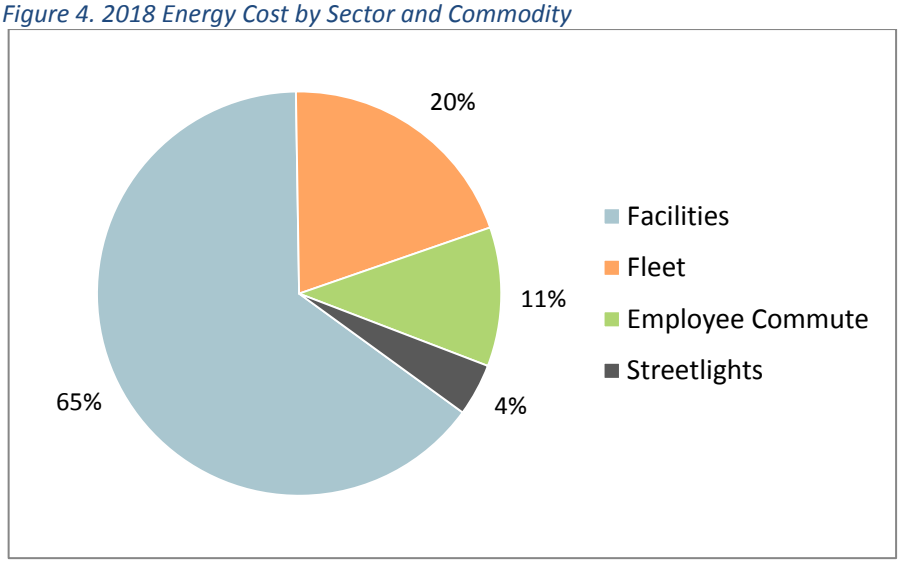
the construction of the new Acton Library and in 2013 opened the renovated and expanded Halton Hills Cultural Centre and Library, both LEED certified facilities (Gold and Silver respectively) operating on low-carbon geothermal heating systems. Both facilities are among the lowest energy intensities in the Town's portfolio, while using significantly less natural gas than comparable facilities with traditional heating systems. For a detailed breakdown of energy consumption at town facilities see Table 4.

Because fleet, employee commutes, and streetlight energy use have not been tracked as closely over this period, the causes of increased energy consumption in those areas are less well understood than changes in facilities. Fleet energy consumption has increased by 27% during the 2011-2018 period, while the introduction of approximately 4,800 LED lamps has led to a 4% decrease in energy consumption from streetlights despite an increased number of lights.

4.2 Corporate Energy Cost

The Town purchases four energy types for its operations: Electricity, Natural Gas, Diesel, and Gasoline. In total, the Town spends just over $2.2 million per year on energy. Despite being only 33% of energy use, electricity makes up 63% of energy costs. Because natural gas has remained relatively inexpensive, it is the lowest cost energy source at present. The new federal carbon pricing system, introduced on April 1st, 2019 should lead to increases in the price of natural gas, diesel, and gasoline, while electricity will be less heavily impacted due to the low-carbon nature of the Ontario electricity grid.

Figure 4. 2018 Energy Cost by Sector and Commodity



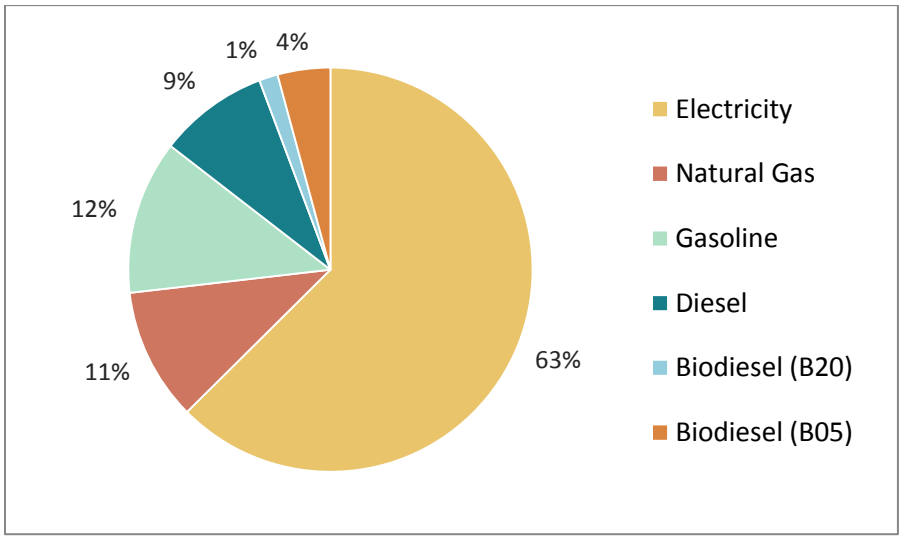


Table 5. Cost by Sector Comparison 2011-2018 ($)

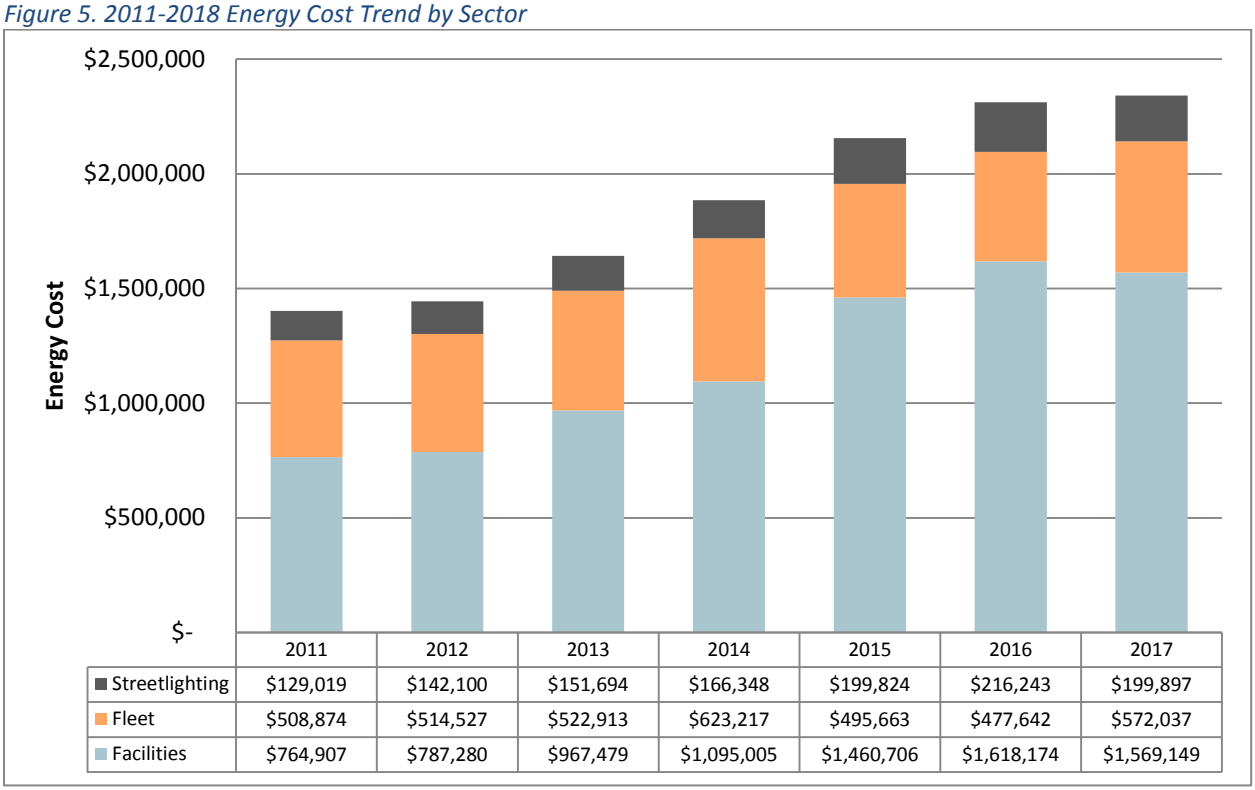
Sector	2011	2018	Variance	% Change
Facilities	764,907	1,522,687	757,781	99%
Fleet	508,874	626,616	117,743	23%
Streetlighting	129,019	186,083	57,064	44%
Total	**1,402,799**	**2,335,387**	**932,588**	**66%**

Table 6. Cost by Commodity Comparison 2011-2018 ($)

Source	**2011**	**2018**	**Variance**	**%**
Electricity	746,017	1,461,095	715,078	96%
Natural Gas	147,908	247,675	99,767	67%
Gasoline	220,636	287,512	66,876	30%
Diesel	177,922	205,643	27,722	16%
Biodiesel (B20)	45,131	34,990	-10,141	-22%
Biodiesel (B05)	65,186	98,472	33,286	51%
Total	**1,292,483**	**2,201,925**	**909,443**	**70%**

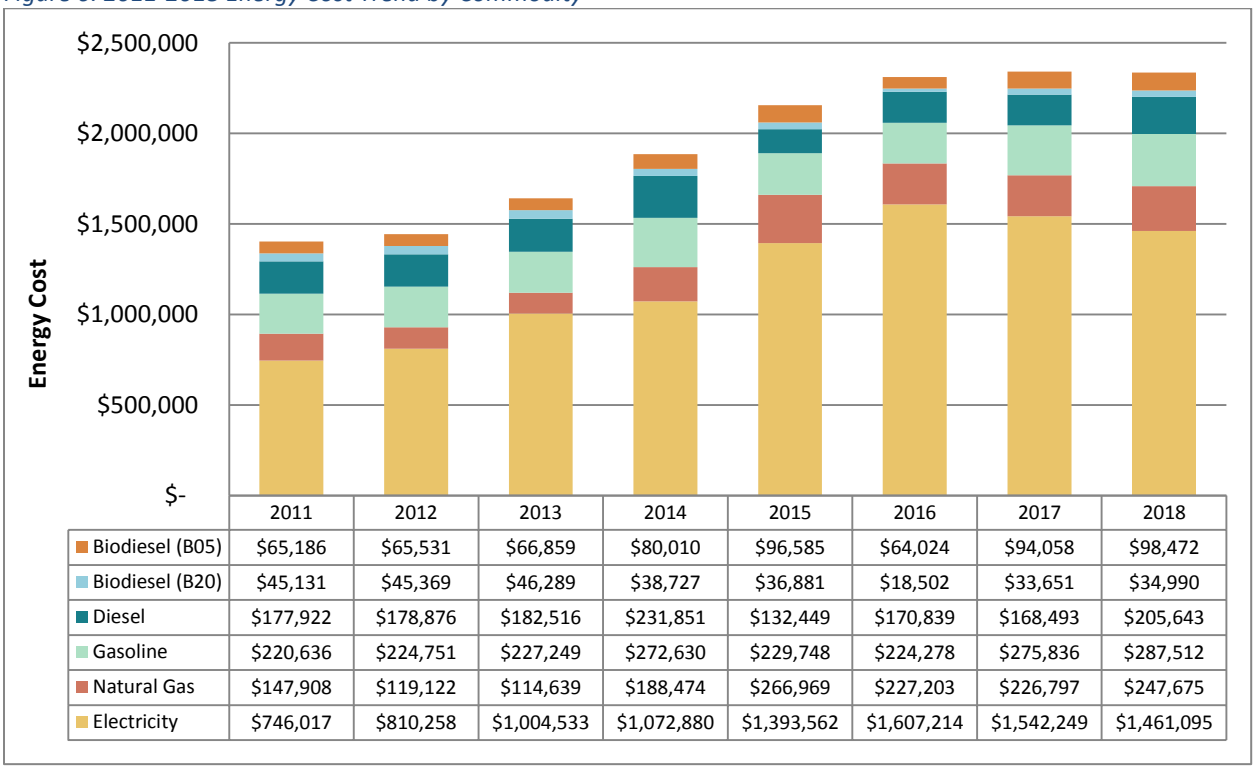
Energy costs associated with Town activities have increased 70% over the period 2011-2018. This increase has been driven by rising costs for all commodities except gasoline. Electricity in particular has seen significant price increases over this period, which, combined with significant increase in electricity consumption, has led to a 96% increase in total expenditures on electricity. However, despite an overall 2% increase in electricity consumption, electricity costs have decreased by 5% between 2017 and 2018, due to a drop in electricity rates during this period.

Figure 5. 2011-2018 Energy Cost Trend by Sector



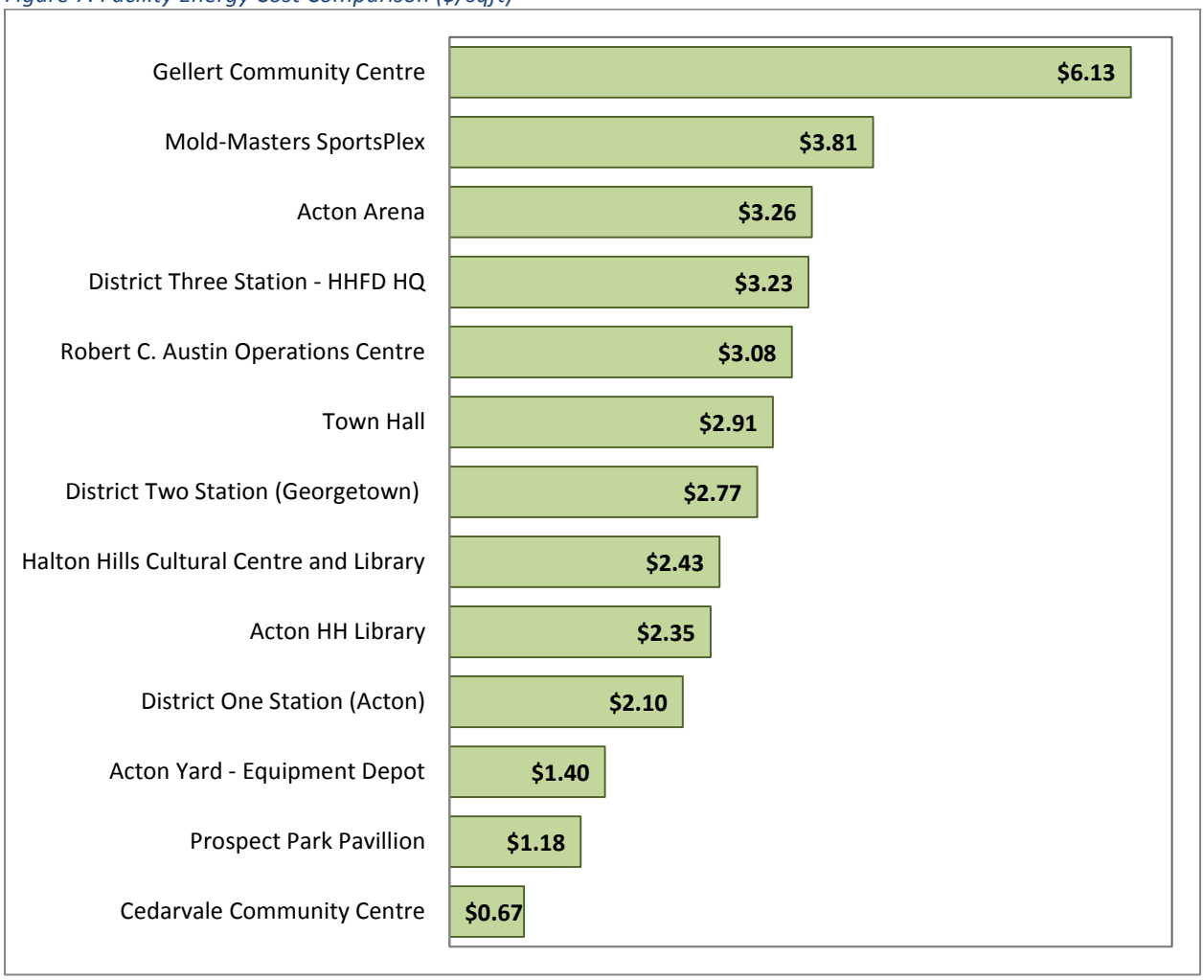
	2011	2012	2013	2014	2015	2016	2017
Streetlighting	$129,019	$142,100	$151,694	$166,348	$199,824	$216,243	$199,897
Fleet	$508,874	$514,527	$522,913	$623,217	$495,663	$477,642	$572,037
Facilities	$764,907	$787,280	$967,479	$1,095,005	$1,460,706	$1,618,174	$1,569,149

Figure 6. 2011-2018 Energy Cost Trend by Commodity



	2011	2012	2013	2014	2015	2016	2017	2018
Biodiesel (B05)	$65,186	$65,531	$66,859	$80,010	$96,585	$64,024	$94,058	$98,472
Biodiesel (B20)	$45,131	$45,369	$46,289	$38,727	$36,881	$18,502	$33,651	$34,990
Diesel	$177,922	$178,876	$182,516	$231,851	$132,449	$170,839	$168,493	$205,643
Gasoline	$220,636	$224,751	$227,249	$272,630	$229,748	$224,278	$275,836	$287,512
Natural Gas	$147,908	$119,122	$114,639	$188,474	$266,969	$227,203	$226,797	$247,675
Electricity	$746,017	$810,258	$1,004,533	$1,072,880	$1,393,562	$1,607,214	$1,542,249	$1,461,095

Figure 7. Facility Energy Cost Comparison ($/sqft)



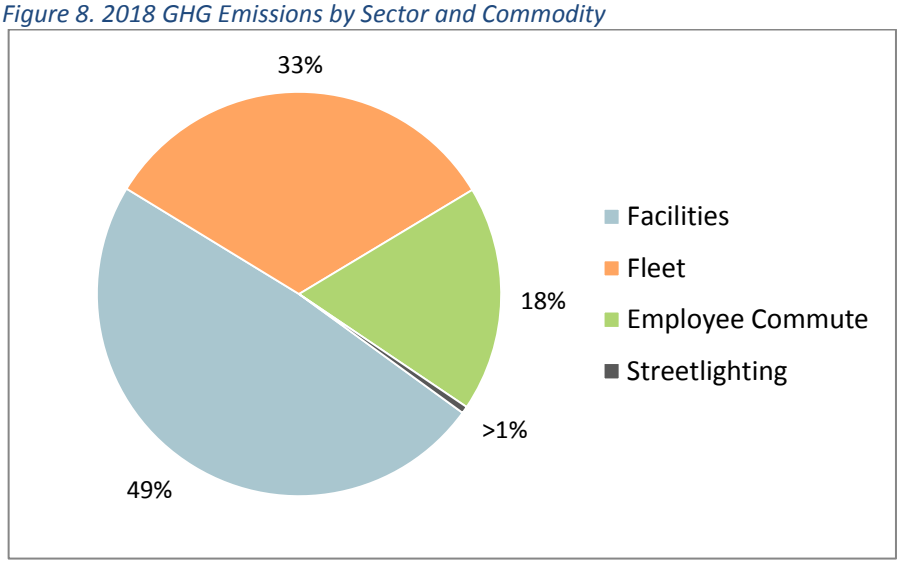
On a $/sqft basis, Gellert Community Centre is the most expensive facility to run, costing just over $6/sqft/year. The least expensive facility to operate was the Cedarvale Community Centre, however, that facility is only open an average of 35 hours per week, the least of all town facilities. In general, facilities with energy intensive operations that rely on large amounts of electricity – indoor ice rinks and pools – are the most expensive to operate.

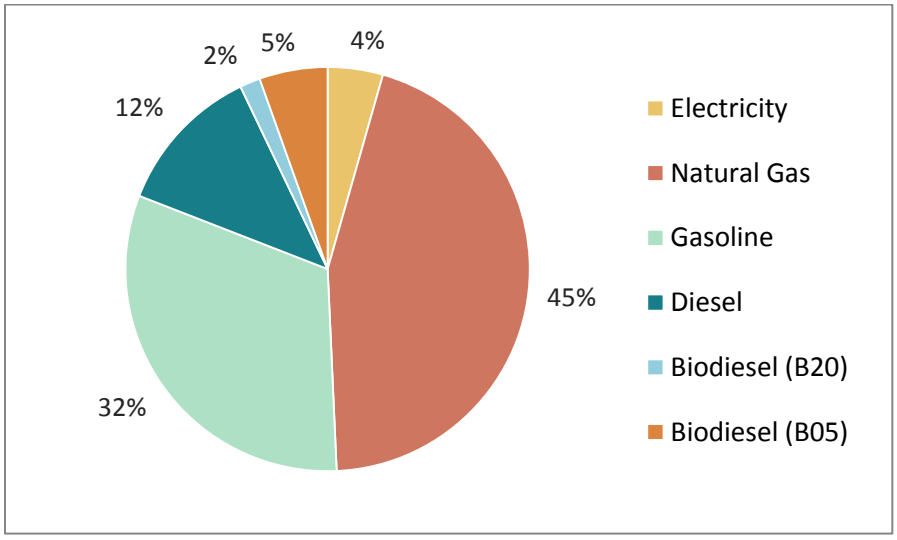
During the period from 2011-2018, Energy efficiency measures, including energy efficient new construction, have reduced potential energy costs by approximately $170,000 per year. These measures are described in greater detail in section 5.3.

4.3 Corporate Emissions

In 2018, the Town generated 3,890 tonnes of CO_2 equivalents (tCO_2e). Nearly half of all emissions were associated with facilities (49%), with fleet emissions making up the next largest source at 33%. All transportation related emissions, including employee commutes constitute just over 50% of Town emissions, despite making up only 33% of energy consumption. This is a result of the relative carbon intensity of gasoline and diesel.

Figure 8. 2018 GHG Emissions by Sector and Commodity





Annual emissions associated with Town operations have increased by 8% during the period from 2011-2018, from 3,600 tCO_2e to 3,890 tCO_2e – an increase of 290 tCO_2e. Despite significantly increased energy use, emissions associated with Town facilities have increased by only 3% during this time – this is, in large part, due to the impact of the provincial coal phase out on emissions associated with the electricity grid, without which emissions in facilities would have increased by just over 30%.

As a result of the coal phase out and the installation of LEDs, emissions associated with Street lighting have decreased by 83%. From 2011-2017, emissions associated with fleet activities have increased by 27%, the largest increase of all sectors.

Table 7. Emissions by Commodity Comparison 2011-2018 (tCO_2e)

Source	2011	2018	Variance	% Change
Electricity	727	172	-556	-76%
Natural Gas	1,233	1,746	513	42%
Gasoline	1,031	1,230	198	19%
Diesel	393	467	74	19%
Biodiesel (B20)	80	64	-16	-20%
Biodiesel (B05)	137	212	76	55%
Total	**3,600**	**3,890**	**290**	**8%**

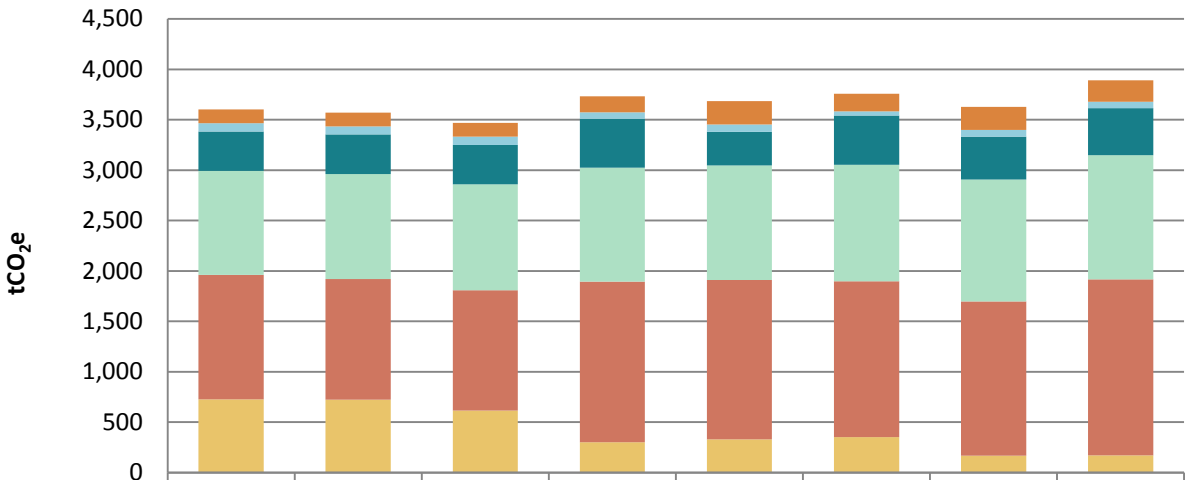
Table 8. Emissions by Sector Comparison 2011-2018 (tCO_2e)

Sector	2011	2018	Variance	% Change
Facilities	1,834	1,895	61	3%
Fleet	999	1,271	272	27%
Employee Commute	642	702	60	9%
Streetlighting	126	22	-104	-83%
Total	**3,600**	**3,890**	**290**	**8%**

While emissions from Town activities have increased by 3% from 2011 to 2017, during this time the Town undertook various renewable and low carbon energy projects. Four of the Town's facilities now have geothermal heating systems, two of which have been installed since 2011 (Acton Library and Halton Hills Library and Cultural Centre).

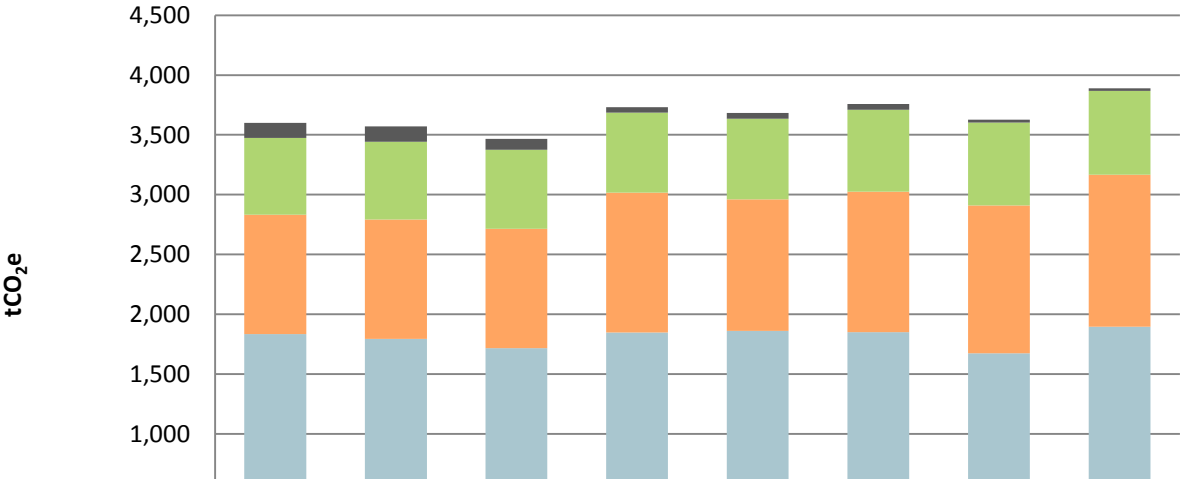
In addition, through the local distribution company, Halton Hills Hydro, the Town has installed three solar arrays on Town facilities (Mold-Masters SportsPlex, Acton Arena, and the Robert C. Austin Operations Centre). Because these panels generate carbon neutral energy during the day, when average carbon intensity for the Ontario grid is highest, they offset emissions at a higher rate than the grid average tCO_2e/kWh. As a result, they reduce emissions associated with energy production by approximately 427 tCO_2e per year. If these offsets are considered as part of the emissions reductions from Town activities, the Town has reduced emissions by 4% from 2011 levels. The relative contribution of different factors to the change in emissions between 2011 and 2018 can be seen in Figure 11. Figure 12 shows the trajectory of Town emissions over the 2011-2018 period with and without offsets from renewable energy generation.

Figure 9. 2011-2018 Emission Trend by Commodity



	2011	2012	2013	2014	2015	2016	2017	2018
Biodiesel (B05)	137	137	137	159	230	174	226	212
Biodiesel (B20)	80	80	80	65	74	42	68	64
Diesel	393	393	393	484	332	487	426	467
Gasoline	1,031	1,040	1,049	1,131	1,138	1,156	1,210	1,230
Natural Gas	1,233	1,199	1,195	1,592	1,580	1,545	1,527	1,746
Electricity	727	723	615	302	328	353	169	172

Figure10. 2011-2018 Emission Trend by Sector



	2011	2012	2013	2014	2015	2016	2017	2018
Streetlighting	126	127	93	46.75	47.09	47.43	21.87	21.87
Employee Commute	642	650	659	668	676	685	694	702
Fleet	999	999	999	1171	1098	1174	1236	1271
Facilities	1,834	1,794	1,717	1,847	1,862	1,850	1,674	1,895

Figure 11. Factors Contributing to Change in Emissions 2011-2018

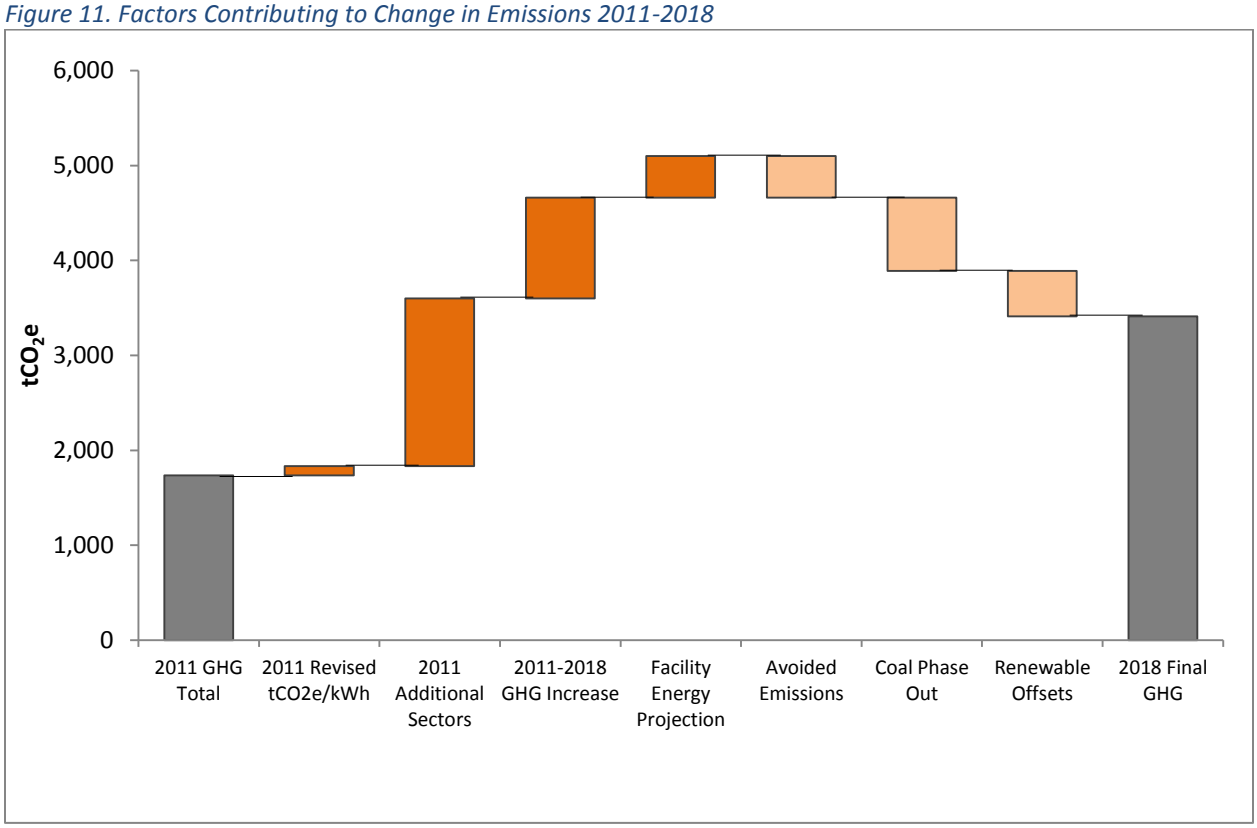
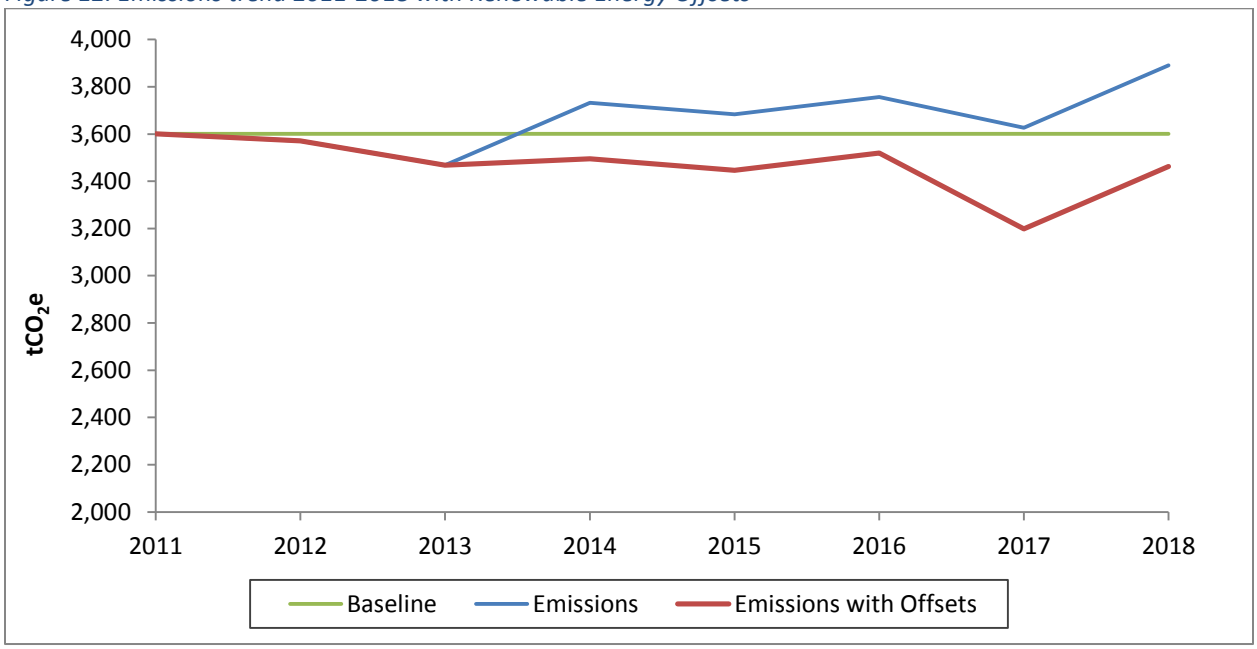


Figure 12. Emissions trend 2011-2018 with Renewable Energy Offsets



5. 2014 Plan Implementation Assessment

5.1 Stakeholder Engagement

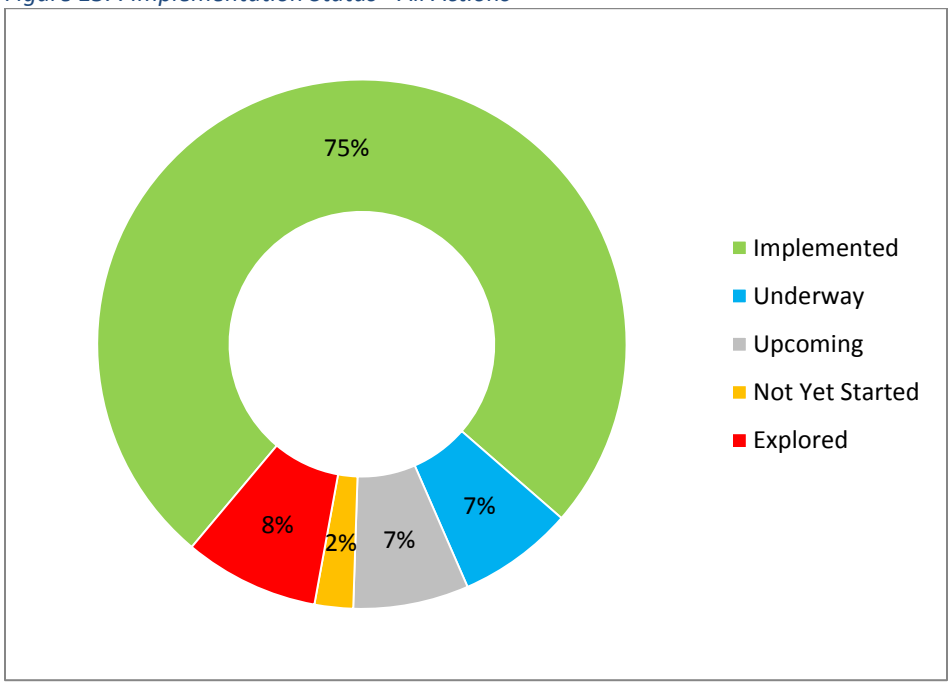
The implementation of the Corporate Energy Management Plan has been the responsibility of the Office of Sustainability alongside the Corporate Energy Management Team (CEMT). The CEMT includes members from relevant Town divisions, including the facilities manager, the fleet manager, representatives from purchasing, asset management, libraries, transportation, and fire as well as Halton Hills Hydro. The members of this team set annual priorities for plan implementation and track the completion of projects.

In addition, the Office of Sustainability reports annually on facility energy use through the reporting standards initially established in the Green Energy Act and currently contained in the Electricity Act. The Town has also recently completed the 2018 80BY50 report which includes updates on the state of implementation of the Corporate Energy Plan. This report, alongside the annual facility reporting is available to the public.

5.2 Overview of Implementation

The Town recently conducted a study on the progress towards implementing the 2014 Corporate Energy Plan, alongside the adoption of a new set of emissions reduction targets. The 80BY50 report includes a detailed overview of actions implemented since the development of the 2014 plan. Since that report was completed, a number of additional actions have been completed or undertaken. Figure 13, below, summarizes current progress towards plan implementation.

Figure 13. . Implementation Status - All Actions



Over 80% of the actions developed through the 2014 Corporate Energy Plan are either completed or underway. A further 9% are upcoming or not started, while only 8% were explored but found to be unfeasible, either due to financial limitations, technical challenges, or changing circumstances that rendered them no longer relevant.

Figure 14. Implementation Status - Priority Actions

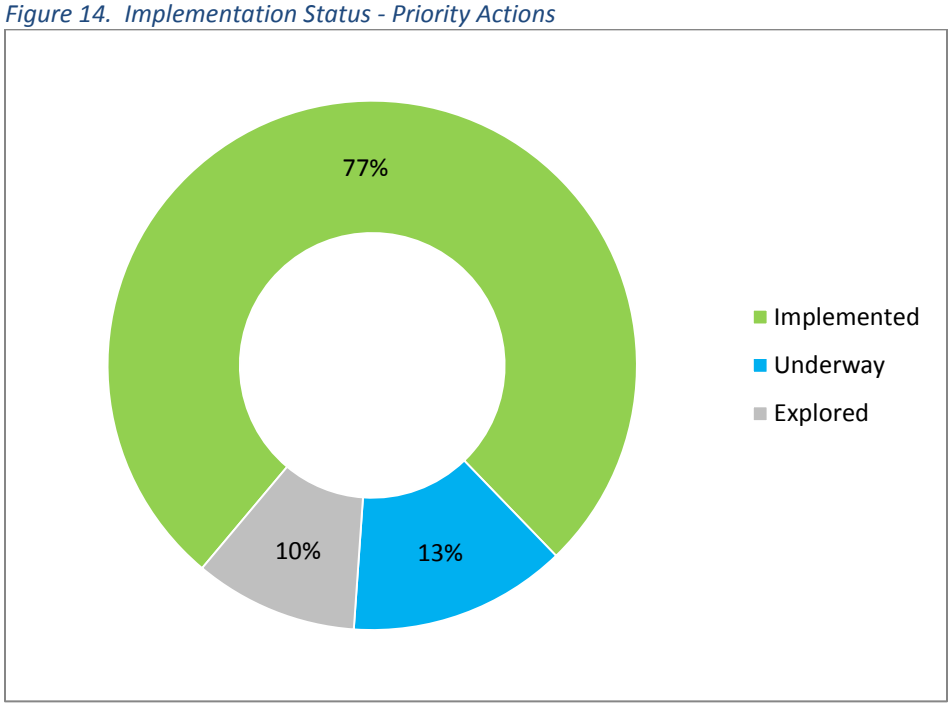
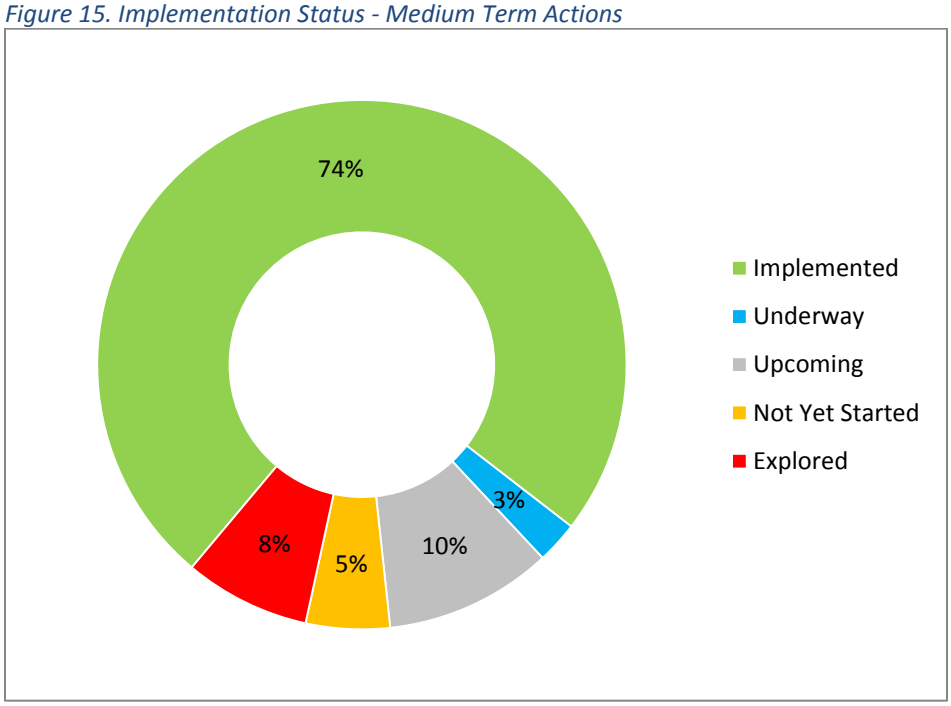
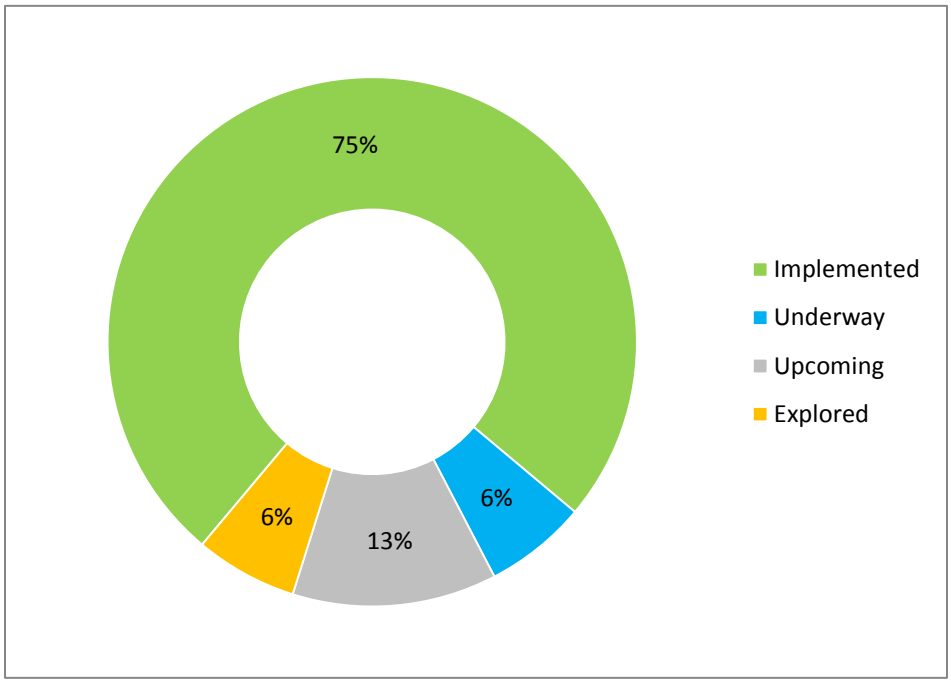


Figure 15. Implementation Status - Medium Term Actions



The 2014 Plan broke actions down into priority actions (figure 14), medium-term actions (figure 15), and long-term actions (figure 16). Of the priority actions, all actions are either complete, ongoing/underway, or have been explored and will not be undertaken during this plan period. Medium-term is the only category with actions that have not been started, with 5% of all medium term actions not initiated on any level yet, with a further 10% planned to be undertaken in 2019.

Figure 9. Implementation Status - Long-Term Actions

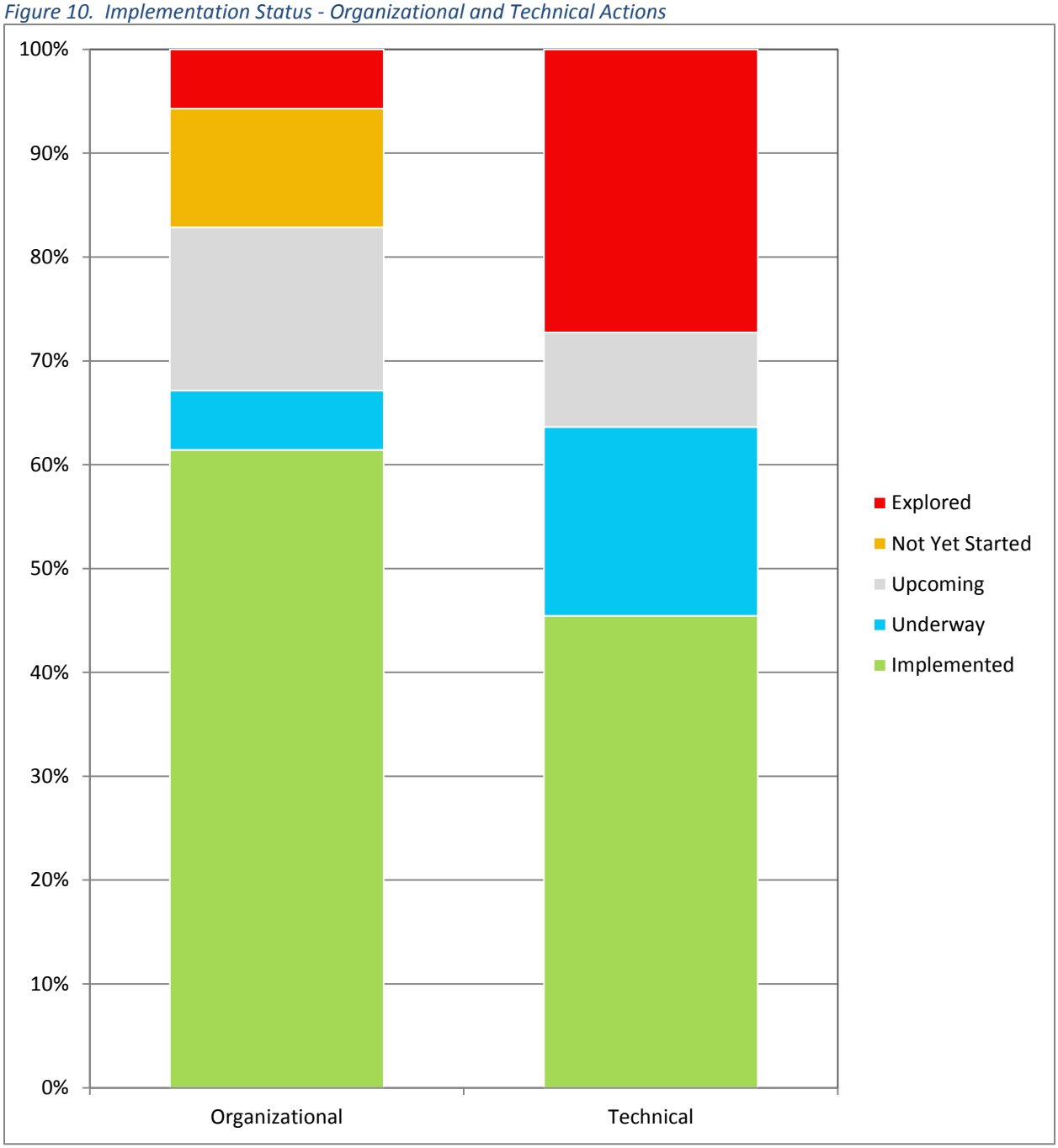


Of the long-term actions 13% are upcoming in 2019, many of which relate to tasks necessary to evaluate and update the 2014 plan. This report completes a number of those actions.

All actions in the 2014 plan have been categorized as either technical or organizational, depending on whether they relate to specific technical measures aimed at increasing efficiency of facilities and vehicles, or relate to changes within the processes and organizational structures of the Town. This breakdown of actions, shown in figure 17 below, suggests that the Town has been successful at building the organizational structures necessary to manage energy use, with over 80% of organizational actions complete, underway, or upcoming. Technical actions have been more challenging, as almost 30% of technical actions recommended in the 2014 have been explored but could not implemented for various reasons. For example, heat recovery ventilators were found to be incompatible with the operation of the ventilation system at Gellert Community Centre, while implementation plug load reduction measures for IT equipment were determined to be an inefficient use of limited resources.

Furthermore, these technical actions often group specific interventions across multiple facilities. For example, air sealing measures were recommended at all Town facilities, but were only undertaken at one building. So the number of technical actions either explored or not yet started would likely be higher if those actions were broken out individually.

Figure 10. Implementation Status - Organizational and Technical Actions



5.3 Quantification of actions and methodology

As discussed in the previous section, many of the actions undertaken through the 2014 iteration of the Corporate Energy Plan were organizational changes necessary to embed energy management within Town operations and improve capacity to analyze and manage energy use. As a result, many of the actions undertaken through the plan did not directly contribute to energy conservation or emissions reductions.

Of the actions that were undertaken with a direct impact on energy and emissions, it is challenging to disaggregate the impact of individual actions from overall energy use trends. This report has nevertheless sought to quantify the relative contributions of specific action types to the overall energy trends discussed in section 4. For this purpose, impacts have been allocated to three categories:

1. Energy efficient new construction
2. Retrofits and operations changes in existing buildings
3. Renewable energy projects

Table 10 quantifies the relative contribution of those three action types to energy and emissions trends observed in Town facilities. In two cases, Acton Arena and Mold-Masters SportsPlex, energy efficiency measures in major expansions have been initiated alongside efficiency measures throughout the existing floor space. In both cases, energy and emissions impacts associated with those facilities have been allocated to the 'energy efficient new construction' category. It should be noted that these are instructive estimates of energy impacts rather than the results of robust monitoring and verification processes and should be used with caution.

Table 10. Relative contribution of action types to energy trends (2011-2018)

Action Type	Energy (ekWh)	Emissions (tCO_2e)	Cost ($)
Energy Efficient New Construction	-2,480,025	-37	-48,192
Retrofits and operations changes in existing buildings	-390,077	-398	-130,144
Renewable energy projects	-1,212,160	-478	na
Total	**-4,082,262**	**-913**	**-178,337**

5.4 Implementation Partners and Funding Mechanisms

Implementation of the Corporate Energy Plan was completed through the Town's capital and operating budgets. New construction projects have been funded in part through the charitable contributions of businesses operating in the Town. Halton Hills Hydro has been a key partner

throughout the implementation period and has assisted with the implementation of renewable energy projects, streetlighting conversions, and has provided input on plan implementation through the Corporate Energy Management Team.

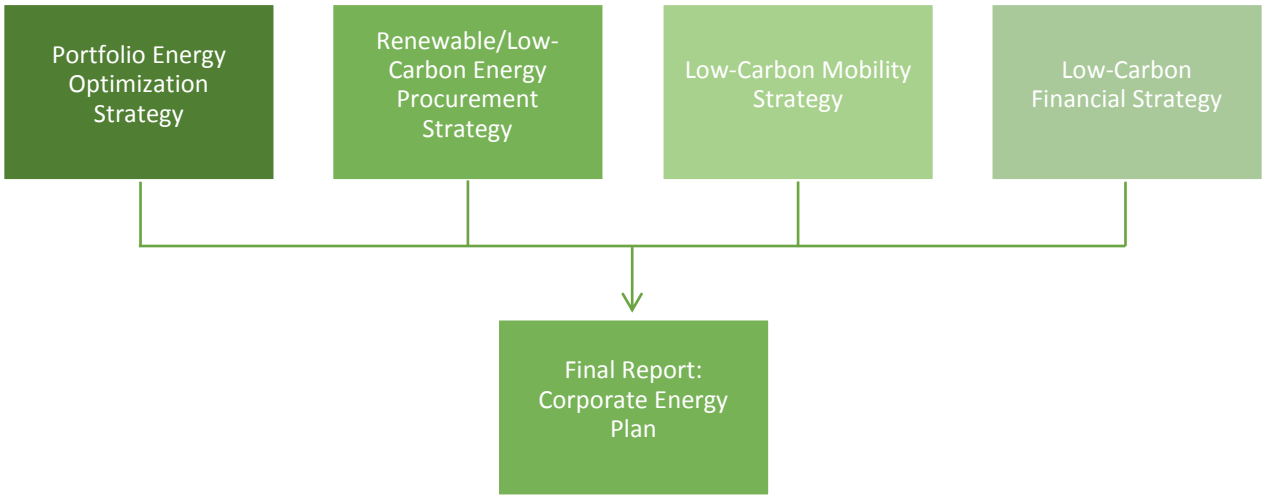
6. 2019 CORPORATE ENERGY PLAN UPDATE

Ontario's broader public sector organizations are required to develop and publish an Energy Conservation and Demand Management (ECDM) Plan every five years. As a companion to this report, the Town has developed an update to the 2014 Corporate Energy Plan. The 2020-2025 Corporate Energy Plan will be published alongside this report.

The 2020-2025 Corporate Energy Plan goes beyond the regulatory requirement in outlining the approach to achieving a low-carbon vision by developing four connected foundational strategies:

1. Portfolio Energy Optimization to minimize facility energy consumption while upgrading buildings and maintaining or improving occupant comfort;
2. Renewable/Low-Carbon Energy Procurement to increase the Town's use of renewable energy;
3. Low-Carbon Mobility to address emissions resulting from the Town's vehicle fleet and employee commuting; and
4. Low-Carbon Financial Strategy aimed at developing a comprehensive funding approach to fully enable the Plan's implementation.

Figure 15. Four Strategies of the 2019-2014 Corporate Energy Plan



Town of Halton Hills
2020-2025 Corporate Energy Plan

July 2019

This 2020-2025 Corporate Energy Plan was prepared for the Town of Halton Hills by Enerlife Consulting Inc. It meets the requirements of Ontario Regulation 507/18, which requires Ontario's broader public sector organizations to develop and publish an Energy Conservation and Demand Management (ECDM) Plan every 5 years.

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CONTENTS

1 EXECUTIVE SUMMARY

Together with a growing number of big cities and smaller municipalities across North America and around the world, the Town of Halton Hills (the Town) is taking action to substantially reduce and ultimately eliminate greenhouse gas (GHG) emissions associated with the municipality's corporate facilities and operations. On May 6, 2019, the Town of Halton Hills Council issued a Climate Change Emergency Declaration that points to the need to reduce overall net emissions to zero by 2030. This accelerates the requirement for planning, development and implementation of strategies to achieve deep emissions reductions. This Corporate Energy Plan (the Plan) provides the strategy and roadmap for the period 2020-2025 which will lay the foundations for achieving the Town's longer-term goals.

The Plan is transformational, not just for facilities and vehicles but also for how the Town conducts its business and operations. Every aspect of decision-making should be subject to a no/low-carbon filter affecting the products and services the Town buys, the facilities and services operated and the roles and responsibilities of management and employees. The period from 2020 to 2025 should be a foundation-laying period with an emphasis on alignment of management systems and organizational capacity-building, and on early wins to build experience, confidence and momentum.

The Town is building on its prior successes and existing good practices. In particular, benchmarking indicates that the energy efficiency of the Town's corporate facilities is relatively good compared with other municipalities. The Town has working experience with geothermal installations which are considered key to the no/low-carbon future. The Town's leading Corporate Asset Management program and Corporate Sustainable Building Policy are strong existing platforms into which needed carbon reduction policies, processes and standards can be incorporated.

The focus of the Plan is on getting the best out of the Town's existing assets, capital planning and organizational strengths while investing in facility upgrades with the best emissions reduction potential and highest returns on investment. The aim is to systematically introduce no/low-carbon decision-making while demonstrating substantial emissions reductions which position the Town on the right trajectory towards its goals.

The Plan presents a three-part approach to the progression towards the goal of deep reductions in carbon emissions. The first part is investment in energy efficiency retrofits and operational improvements to corporate facilities which provides a good return on investment. As detailed in Section 3 Portfolio Energy Optimization Strategy, the Plan proposes an investment of $2,676,000 in energy efficiency upgrades to Town facilities over the 5-year period, including addition of building automation technology across all buildings. This investment would be offset by over $250,000 in forecast utility company incentives (rebates). When the measures are fully implemented, the reduced energy and water consumption will generate utility cost savings estimated at more than $400,000 per year at current rates. This work would proceed in phases, beginning in 2020, prioritizing facilities with the best

energy savings potential and those where renewal projects are already planned. Annual progress reporting will verify savings achieved, document lessons learned and refine the planning for the subsequent year.

Second, as outlined in Section 6.2 Long-Term Capital Planning, all new buildings, major renovations and equipment replacements should be planned and implemented to achieve low or no-carbon performance. The Town's Corporate Asset Management program and sustainable building policies will support comprehensive high-performance, low-carbon targets and design, with every capital project subject to these requirements. Additional time and capital to incorporate low carbon design will be included in each project. The proposed retrofit of Gellert Community Centre is an ideal pilot for developing and testing the overall approach, applied to the whole facility, not just the expansion, to create integrated low-carbon design and operations. Similarly, the fleet management strategy will progressively incorporate carbon reduction practices and programs to support low-carbon vehicles, operations and commuting.

The third part of the overall strategy is proactive, long-term investment in geothermal, advanced heat recovery, and renewable energy installations designed to minimize natural gas consumption and associated emissions. Section 4 Renewable/Low-Carbon Energy Procurement Strategy provides details of this approach. Where such investments do not yet meet the Town's economic criteria, capital renewal and replacement projects should be designed to be ready for future installations as technology continues to advance and economics improve. Grants from senior levels of government will be pursued to help fund these projects.

Recommendations:

1. Take a systematic, evidence-based approach to developing low-carbon facilities, operations and organizational capacity. Develop low-carbon standards, practices and management systems through currently planned capital projects and targeted high-potential retrofits before committing to major capital investments.
2. Focus first on understanding and making the most of existing facilities and operations. Testing and analysis of individual building systems, effective documentation, staff training, and performance-based service contracts can bring them to optimal performance and keep them running efficiently in future. Applying this approach to ventilation, ice plants and other systems is recommended as part of the Corporate Asset Management Program.
3. Continue and conclude the investigation into the operation of the Town's 4 existing geothermal installations to get them operating at their full potential while informing the Town standard for future installations as an essential element of the carbon reduction goal.
4. Halton Hills has an exemplary Corporate Asset Management Program that takes a whole lifecycle approach to realizing value in each of the Town's service areas. Integration of low-carbon considerations and procedures is recommended, particularly during the Needs Identification and Assessment stage and in monitoring performance and costs throughout the physical asset life cycle from initial planning to final disposal.
5. New buildings and major renovations should be designed for climate change adaptation and a low-carbon future, taking into consideration:
    a. High-performance energy efficiency and net-zero carbon design and operations

   b. Renewable energy
   c. Low-carbon transportation opportunities
   d. Climate resilience and survivability, including high-performance building envelopes, protecting or enhancing natural drainage systems, infrastructure (particularly water storage), flood defences and standalone energy supply based on renewables and bio-fuel generators

6. Investment in upgrading existing facilities should prioritize those with high emissions reduction potential and returns on investment while extending the application of building automation technology and developing standardized approaches to operations and maintenance.
7. Make the best use of the current fleet and resources by collecting data on current fleet practices. Prepare for technological advances in new vehicles and fleet management and expand electric vehicle adoption as these become available.

ACKNOWLEDGEMENTS

We would like to acknowledge the assistance of the following stakeholders in preparation of this Plan:

- Michael Dean, Senior Sustainability Planner & Energy Coordinator, Town of Halton Hills
- Gabriel Clarke, former Manager of Sustainability & Climate Change, Town of Halton Hills
- Art Skidmore, CEO and President, Halton Hills Hydro
- Linda Boyer, Conservation and Demand Management Officer, Halton Hills Hydro
- Cara Jarv, Business Services Manager, SouthWestern Energy
- Dharmen Dhaliah, Corporate Asset Manager, Town of Halton Hills
- Duncan Robertson, Budgets and Financial Reporting Supervisor, Town of Halton Hills
- Steve Hamilton, Manager of Facility Capital Projects, Town of Halton Hills
- Matthew Lynch, Fleet Coordinator, Town of Halton Hills
- Simone Gourlay, Manager of Purchasing, Town of Halton Hills
- Geoff Cannon, Chief Librarian, Halton Hills Public Library
- Bruce Morrison, Deputy Fire Chief, Halton Hills Fire Department
- Matthew Roj, Traffic Coordinator, Town of Halton Hills
- John Linhardt, Commissioner of Planning and Sustainability
- Maureen Van Ravens, Manager of Transportation and Development Engineering
- Deanna Locey, Transit Supervisor

LIST OF ACRONYMS

- AHU – air handling unit
- AVL – automatic vehicle location
- BAS – building automation system
- CAM – Corporate Asset Management
- CEP – Corporate Energy Plan
- CO2e – carbon dioxide equivalent
- CSBP – Corporate Sustainable Building Policy
- DCFC - direct current fast charger
- DHW – domestic hot water
- ECDM – energy conservation and demand management
- ekWh – equivalent kilowatt-hours (electricity and natural gas use converted to equivalent units, or natural gas use converted to equivalent units)
- ekWh/sf – total energy (electricity and gas in equivalent kilowatt-hours) or gas use (converted to equivalent kilowatt-hours) per square foot of facility floor space
- EUI – energy use intensity, measured in kWh/sf (electricity) and ekWh/sf (natural gas, and electricity and natural gas combined)
- EV – electric vehicle
- FCM – Federation of Canadian Municipalities
- GHG emissions – greenhouse gas emissions measured in tonnes CO2e
- GRF – green revolving fund
- GSHP – ground-source heat pump
- HVAC – heating, ventilation and air conditioning
- ICEV - internal combustion engine vehicle
- IRR – internal rate of return
- kWh – kilowatt-hours of electricity
- LED – light-emitting diode
- M&V – monitoring and verification
- MUA – make-up air unit
- NPV – net present value
- O&M – operations and maintenance
- PCP – Partners for Climate Protection
- ROI – return on investment
- RTU – roof-top unit
- VFD – variable frequency drive

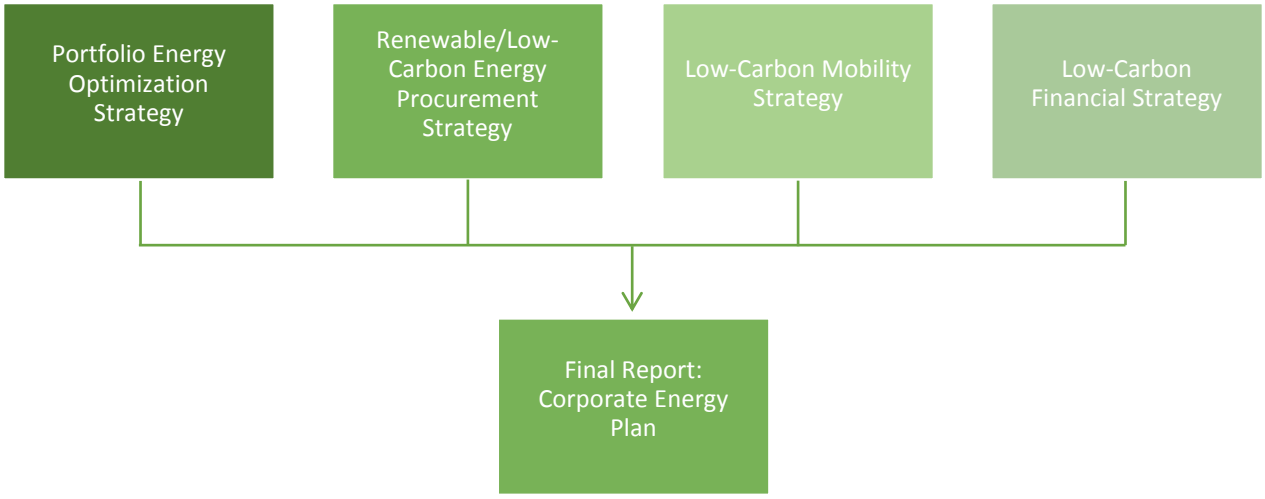
2 INTRODUCTION

Ontario's broader public sector organizations are required to develop and publish an Energy Conservation and Demand Management (ECDM) Plan every five years. Adhering to provincial regulation, in 2014 the Town of Halton Hills (the Town) prepared its first five-year ECDM plan covering the period from 2014-2018, known as the Corporate Energy Plan.

This 2020-2025 Corporate Energy Plan (the Plan) constitutes the Town's second ECDM plan. It updates the 2014 Plan and reaffirms the Town's commitment to energy management and efficiency with an emphasis on deep greenhouse gas (GHG) emissions reductions. It reports on achievements to date and outlines the approach to managing energy in Town facilities over the next five years. The 2020-2025 Plan goes beyond the regulatory requirement in outlining the approach to achieving a low-carbon vision by developing four connected foundational strategies:

1. Portfolio Energy Optimization to minimize facility energy consumption while upgrading buildings and maintaining or improving occupant comfort;
2. Renewable/Low-Carbon Energy Procurement to increase the Town's use of renewable energy;
3. Low-Carbon Mobility to address emissions resulting from the Town's vehicle fleet and employee commuting; and
4. Low-Carbon Financial Strategy aimed at developing a comprehensive funding approach to fully enable the Plan's implementation.

Figure 1 Four strategies of the 2020-2025 Corporate Energy Plan



2.1 About Town of Halton Hills

The Town of Halton Hills is a lower-tier municipality in the Regional Municipality of Halton, located in the northwestern end of the Greater Toronto Area, Ontario, Canada, with a population of 61,161 (2016). The largest population centres are Georgetown and Acton.

The Town of Halton Hills has built a strong reputation as a leader in energy and emissions management. Development of high efficiency new buildings and an energy conservation ethos among staff and facility managers, together with implementation of renewable and alternative energy projects has brought quality of life benefits to employees and residents while significantly reducing utility costs associated with Town operations. The efforts are directed and driven by an active Corporate Energy Team which consists of the Office of Sustainability and departmental representatives.

2.2 Objectives of the 2020-2025 Corporate Energy Plan

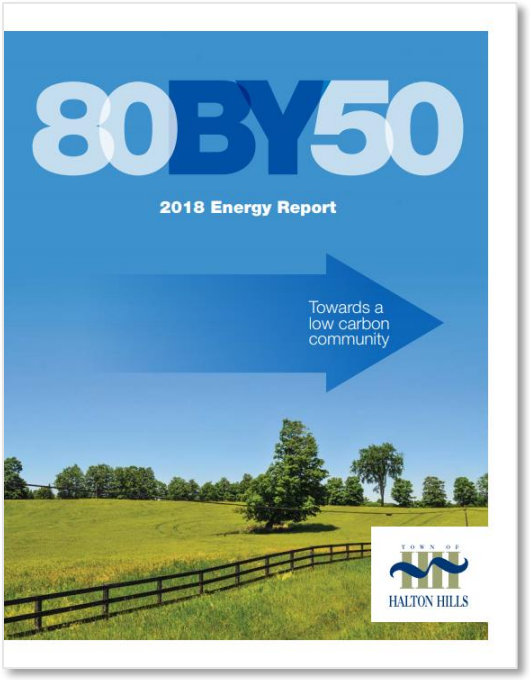
In November of 2017, Town Council adopted emissions reduction targets which aim for an 80% reduction in emissions by 2050. More recently, on May 6, 2019, Council issued a Climate Change Emergency Declaration and set a goal to become a net zero municipality by 2030. Central to this commitment is leadership by example, with the Town demonstrating exceptional performance through its own facilities, fleet and operations.

Achieving this goal requires a radical rethink of every aspect of planning, procurement, design and operations. The new Plan builds on successes to date, while implementing actions to deepen energy and emissions reductions and build organizational capacity to deliver and sustain improvements. Each of the strategies in the Plan was developed in consideration of this goal. Successful implementation will benefit current and future generations and create pride and inspiration across the community through delivering measurable results.

The Plan will also enable the Town to complete Milestones 4 and 5 of the Federation of Canadian Municipalities' Partners for Climate Protection (PCP) Program, while creating investment and employment opportunities across the community.

2.3 Development of the 2020-2025 Corporate Energy Plan

As part of the Plan development process the Town convened a project management team and a steering committee. The steering committee was comprised of members of the existing Corporate Energy Management Team and other important stakeholders. This body met at key points throughout the development process to provide input, subject matter expertise and feedback. In addition to bi-weekly project management meetings, consultation with department representatives gathered their input and advice. These focused, strategy-specific meetings included two with fleet operations, one with asset management and finance, and one with Halton Hills Hydro to discuss electric vehicle charging stations and other collaboration opportunities. A Corporate Energy Plan update workshop, which included the Corporate Energy Team as well as Corporate Services representatives, was held on June 18, 2019.



2.4 Results from the Past 5 Years

The 2014 Corporate Energy Plan focused on lowering the Town's natural gas, electricity and vehicle fuel consumption, increasing the use of low-carbon technologies and supporting the use of renewable energy. That plan set a goal of 16.7% energy intensity reduction (electricity and natural gas use per square foot of floor space to account for growth in building areas). In 2018, the Town prepared a comprehensive Energy Report, outlining the status of the 85 actions of the 2014 Corporate Energy Plan, including priority actions (2014-2015), medium-term actions (2015-2017), and long-term actions (2017-2019).

To continue this principle of transparency, the Town is preparing a Current Conditions Report which includes a review of energy use trends over the past five years, as well as additional details on projects implemented and other actions undertaken to date. The Current Conditions Report is expected to be published along with this 2020-2025 Corporate Energy Plan and will be posted on the Town's website.

3 PORTFOLIO ENERGY OPTIMIZATION STRATEGY

Benchmarking shows that the Town's buildings are relatively energy efficient compared against similar facilities owned by other municipalities (see Appendix A: Comparison with Other Facilities). This good performance is attributed to a high level of operational practices. The further energy and emissions reductions presented in the Plan will come from equipment testing and upgrades, retrofits to equipment and expanded use of building automation. The Corporate Energy Team and Asset Management program are the cornerstones of the platform through which higher efficiency will be achieved and sustained over time. The strategy starts with an overview of the current and targeted energy use intensities for the Town facilities. The combined costs, savings and incentives from the recommended measures are summarized in the form of a cashflow model included at the end of this section.

The overall approach is summarized as follows:

- Conclude the testing and investigations into the existing geothermal systems and get them all working as intended. Develop a corporate standard for future geothermal installations in other buildings which are considered essential to reaching the Town's carbon reduction goals
- Continue targeted testing and analysis to determine operating performance of building systems and equipment and identify areas for improvement
- Invest in retrofits and operational improvements, prioritizing the high-savings potential buildings identified in the Plan
- Prepare low carbon design briefs (see Appendix F: Low-Carbon Design Brief) for existing buildings to ensure that no/low carbon options are considered for every capital project to avoid conventional designs for facility renewals and expansions and like-for-like equipment replacements. Pilot this approach with the planned major renovation of the Gellert Community Centre
- Update corporate standards to incorporate design (such as equipment selection and system power density) and operational (such as HVAC scheduling and temperature set-point) standards
- Set and meet high-performance energy and emissions targets for all new buildings and expansions

3.1 2018 Energy and Emissions Baseline and Energy Savings Potential

Table 1 presents the 2018 energy use, costs, and greenhouse gas emissions for Town facilities.

Table 1 Town of Halton Hills 2018 energy use, costs, and GHG emissions, by facility

Facility	2018 Energy Use (ekWh)	GHG Emissions (tonnes CO2e)	2018 Utility Costs ($)
Prospect Park Pavilion	**60,846**	**6**	**$ 5,512**
Electricity	33,976	1	$ 4,534
Natural Gas	26,870	5	$ 978
Acton Yard - Equipment Depot	**136,412**	**22**	**$ 5,819**
Electricity	16,535	0	$ 2,413
Natural Gas	119,877	22	$ 3,406
Acton Library Branch	**139,048**	**6**	**$ 16,366**
Electricity	118,784	2	$ 15,554
Natural Gas	20,264	4	$ 812
Cedarvale Community Centre	**200,344**	**34**	**$ 8,271**
Electricity	15,876	0	$ 2,800
Natural Gas	184,468	34	$ 5,471
District One Station (Acton)	**372,736**	**48**	**$ 22,628**
Electricity	128,440	3	$ 16,137
Natural Gas	244,296	45	$ 6,491
District Three Station - HHFD HQ	**335,270**	**23**	**$ 34,304**
Electricity	235,068	5	$ 31,460
Natural Gas	100,202	18	$ 2,844
District Two Station (Georgetown)	**375,271**	**29**	**$ 35,679**
Electricity	244,130	5	$ 32,062
Natural Gas	131,141	24	$ 3,617
Halton Hills Cultural Centre and Library	**743,218**	**20**	**$ 123,794**
Electricity	709,560	14	$ 122,644
Natural Gas	33,658	6	$ 1,150
Town Hall	**861,208**	**64**	**$ 112,956**
Electricity	578,520	12	$ 104,744
Natural Gas	282,688	52	$ 8,212
Robert C Austin Operations Centre	**1,315,482**	**171**	**$ 98,736**
Electricity	429,120	9	$ 75,581
Natural Gas	886,362	162	$ 23,155
Acton Arena	**2,791,889**	**302**	**$ 266,638**
Electricity	1,284,171	26	$ 227,534
Natural Gas	1,507,718	276	$ 39,104
Gellert Community Centre	**3,641,765**	**523**	**$ 225,736**
Electricity	888,438	18	$ 155,318
Natural Gas	2,753,327	505	$ 70,418
Mold-Masters SportsPlex	**6,042,825**	**648**	**$ 566,248**
Electricity	2,811,451	56	$ 484,230
Natural Gas	3,231,374	592	$ 82,018
Total	**16,950,368**	**1,895**	**$ 1,522,687**

Site-specific high-performance energy targets have been developed for each facility based on benchmarking against similar buildings in the Mayors' Megawatt Challenge program[1] database. These targets can generally be met through cost-effective retrofits and good facility operations.

Table 2 shows the energy, utility cost and emissions reductions to be achieved through meeting these targets and serves to quantify the overall savings potential through energy efficiency improvements while identifying the highest-potential buildings.

Table 2 Energy use, targets, and savings potential (sorted by GHG emissions reduction potential)

Facility	2018 Total Energy Use Intensity, ekWh/sf	Target Total Energy Use Intensity, ekWh/sf	Total Energy Savings Potential, %	Total Energy Savings Potential, $/yr	GHG Emissions Reduction Potential (tonnes CO2e)
Mold-Masters SportsPlex	38.26	24.06	37%	$176,771	256.9
Gellert Community Centre	80.82	51.81	36%	$27,508	204.0
Acton Arena	29.30	22.75	22%	$22,688	102.7
Robert C Austin Operations Centre	53.25	33.83	36%	$39,754	58.4
District One Station (Acton)	33.05	12.52	62%	$12,550	34.5
District Two Station (Georgetown)	24.12	8.94	63%	$22,236	26.3
Town Hall	22.17	15.05	32%	$32,814	23.4
District Three Station – HHFD HQ	22.38	8.94	60%	$22,167	13.8
Acton Yard – Equipment Depot	54.99	25.89	53%	$1,743	12.9
Cedarvale Community Centre	14.22	9.28	35%	$1,420	10.5
Halton Hills Cultural Centre and Library	14.83	9.75	34%	$40,809	8.3
Acton Library Branch	16.02	9.58	40%	$7,644	3.7
Prospect Park Pavilion	12.71	7.08	44%	$4,593	0.5
TOTAL				**$412,696**	**756**

Note that numbers may not add up to totals due to rounding.

3.2 Facility Site Visits

Site visits were conducted at six Town facilities to confirm energy targets, document equipment and systems and identify the operational and retrofit measures required. Facilities selected for the site visits had high estimated greenhouse gas reduction potential. One facility with geothermal was additionally selected, as this will be a key component of the carbon reduction strategy going forward. Halton Hills Cultural Centre and Library was added to the list as it has potential for electricity savings. The six buildings are as follows:

- Acton Arena
- Gellert Community Centre
- Mold-Masters SportsPlex

[1] Mayors' Megawatt Challenge (MMC) is a network of municipalities that features events, benchmarking and assessment reports, on-going energy and water reporting, analytical tools, and awards and recognition.

- Town Hall
- Halton Hills Cultural Centre and Library
- District Three Station – HHFD HQ

3.3 Recommended Energy Efficiency Measures

This analysis identifies, assesses and prioritizes projects and develops implementation budgets to guide the allocation of funding and resources. Project-level economic analyses across the portfolio link to the Low Carbon Financial Strategy (Section 7) and support evaluation of possible pathways to net-zero energy for buildings. The aim is a phased implementation of deep energy retrofit and operational strategies that can deliver economic, environmental and occupant well-being benefits.

Table 3 summarizes the recommended measure types, their estimated budget costs, savings, and paybacks. The following subsections provide the details of recommended measures. The overall budget for energy efficiency measures for all buildings is derived from the measure types, costs and savings for the six audited buildings, applied across the whole portfolio. Summaries of measures proposed for each of six audited facilities are provided in Appendix B: Details of Energy Efficiency Measures.

Table 3 Summary of recommended energy efficiency measures by measure type

Measure type	Estimated Cost ($)	Electricity Savings (kWh/year)	Gas Savings (m3/year)	Estimated Savings ($/year)	Incentives ($)	Payback (years)	GHG emissions reduction (tonnes CO2e)
Lighting	$353,387	340,669	0	$57,914	$34,067	5.5	6.8
HVAC & Controls Retrofits	$2,082,243	1,277,223	258,688	$283,947	$179,460	6.8	521.2
Operations	$110,478	175,200	102,499	$56,259	$38,020	1.3	199.9
Building Envelope[2]	$105,728	64,366	14,068	$14,576	$9,250	6.6	28.2
Training	$24,000	0	0	0	0	0	0
TOTAL	**$2,675,836**	**1,857,459**	**375,255**	**$412,696**	**$260,797**	**6.4**	**756**

Note that numbers may not add up to totals due to rounding.

3.3.1 Lighting

Independent lighting audits are recommended to ensure correct product selection, light levels and power densities. The audits will avoid overlit spaces and generally result in a reduction in fixtures, ballasts, lamps and electricity use and lower long-term maintenance costs. The audits record existing fixtures, ballasts and lamps and specify the most appropriate LED replacement. They measure existing light levels and power densities (Watts/sf) for each space and the equivalent for the proposed replacement. Power densities should generally fall between 0.1-0.4 Watts/sf for most space types.

[2] Window replacements at Town Hall (estimated cost of $160,000) are not considered for implementation within the 5-year term of this Plan but are in the Capital Plan.

The auditor will identify fixtures which are in poor condition and need replacement and where re-circuiting is recommended to maximize the potential for scheduling and controls and connect excessive emergency lighting fixtures to general lighting circuits.

3.3.2 Heating, Ventilation and Air Conditioning (HVAC) and Controls

Performance testing of all HVAC systems is recommended to establish operating flow rates, pressures and power consumption. This applies to air handling and hydronic systems, dehumidifiers and domestic hot water systems and would include either trend logs from the building automation system or data-logging to determine how efficiently the equipment is operating in different seasons. Analysis of test results identifies the specific system improvements necessary to deliver the savings in each building.

The testing also identifies malfunctioning equipment in need of repair or replacement, any system design flaws, damage and leaks requiring refurbishment which can update the Corporate Asset Management program, be included in the retrofit projects or dealt with through the Town's maintenance program.

Plant and equipment testing by specialized contractors, including boilers and refrigeration equipment, is recommended to determine efficiency, operating performance and opportunities for improvement. Ventilation re-balancing and refurbishment includes setting supply, return and exhaust air volumes to match current requirements, together with equipment and system repair and replacement as identified by the testing contractor.

Installation of destratification fans in high-bay areas is recommended where they are not presently installed to improve comfort and reduce space heating requirements by pushing warm air down from the ceiling to the occupied zone.

Variable Frequency Drives (VFDs) are recommended for all fans and pumps which do not have them, prioritizing larger motors with longer operating periods and significant daily and seasonal load variations. VFDs typically provide the greatest electricity and utility cost savings in buildings and allow accurate control of airflows and air balance to avoid drafts, outside air infiltration and associated occupant discomfort.

3.3.3 Process Equipment

Optimization of ice plant efficiency is centred on matching ice temperature and thickness to daily programming requirements and ensuring efficient compressor and pump operation. This work can include replacement of controllers and sensors, re-balancing pumps and re-programming operating sequences, as well as correcting inefficiencies identified through testing (currently underway at Mold-Masters SportsPlex ice plant).

Optimization of swimming pool equipment centres on efficient operation of the dehumidifier and circulating pump and on control set-points and programming. Inefficiencies identified through testing will be corrected and water and space temperature and humidity set-points maintained in accordance with Town standards. See Appendix E: Sample Setpoint Policy for Pools for a sample setpoint policy for pools which focuses on reducing energy use as well as meeting standards for operation.

3.3.4 Building Envelope

Thermographic scans of building exteriors are recommended with the building under positive pressure to identify elements with high conductive heat loss and excessive air leakage.

Local draft-proofing and re-insulation is implemented as necessary to reduce heat losses and improve occupant comfort.

3.3.5 Building Automation Systems (BAS)

Installation of new BAS is recommended for every building which does not yet have one, beginning with the largest facilities having the greatest energy savings potential. While the Town's buildings are generally running efficiently when compared against other municipalities, it will be difficult to sustain high performance and achieve the further improvements without the benefit of current automation technology. A new Town standard is recommended which specifies the level of functionality (and associated investment) required for different facility types and sizes. All systems will support archiving of trend logs and remote access for monitoring and programming changes.

Integration of ice plant controls with the BAS and the Town's program scheduling software will be implemented to streamline operations and maximize energy savings. Table 4 summarizes the proposed BAS installations, upgrades and HVAC optimization costs.

Table 4 Summary of proposed BAS installations, upgrades and HVAC optimization costs

Facility Name	Estimated Costs	Area sq ft	Comments
Mold-Masters SportsPlex	$362,000	151,000	BAS installation for HVAC equipment & web/central control for ice plant controls (includes costs for optimization)
Gellert Community Centre	$226,000	38,000	Upgrade Trane Supervisory Control for 7 rooftop units and install BAS that will include all the equipment
Acton Arena	$232,000	92,000	BAS installation for HVAC equipment & web/central control for ice plant controls (includes costs for optimization)
Robert Austin Operations Centre	$95,625	25,000	Additional sensors to be installed, reset strategies based on performance testing
District One Station (Acton)	$33,408	11,136	Mini BAS Installation for better controls and scheduling
District Two Station (Georgetown)	$15,934	15,934	Based on performance testing. Includes additional sensors - recommissioning of the existing system and implementation of optimization strategies
Town Hall	$212,000	40,000	Additional sensors to be installed; BAS installation
District Three Station - HHFD HQ	$17,088	13,616	Additional sensors to be installed; recommissioning of the existing system
Acton Yard - Equipment Depot	$10,000	2,400	BAS installation
Cedarvale Community Centre	$34,500	11,500	BAS installation
Halton Hills Cultural Centre and Library	$69,185	50,500	Based on performance testing and implementation of optimization strategies including BAS reprogramming
Acton Library Branch	$68,850	9,000	Based on performance testing and implementation of optimization strategies including BAS reprogramming
Prospect Park Pavilion	$14,400	4,800	BAS installation
TOTAL	**$1,390,990**		

Note that numbers may not add up to totals due to rounding.

3.3.6 Geothermal Installations

Geothermal heating and cooling systems extract heat from the ground in winter and reject the heat from air conditioning back into the ground in summer, providing efficient heating and cooling while substantially reducing or eliminating use of natural gas and the associated greenhouse gas emissions. This technology is considered necessary for the Town to meet its carbon reduction goals. The Town has

4 existing installations, two in District Three Station - HHFD HQ and District Two Station (Georgetown) and the other two in the Acton Library Branch and the Halton Hills Cultural Centre and Library.

The fire station systems have experienced severe operational problems from the outset, including equipment failure and replacement. Investigations have led to addition of supplementary heating and cooling plant, and these systems do not provide the intended heating and cooling efficiencies.

Geothermal systems are a central strategy for meeting the Town's carbon reduction goals. Further work is recommended on all four existing installations aimed at maximizing performance and developing design and operational standards for future installations in other Town facilities. Testing includes pump flow rates and hydronic balance as well as data-logging system operation in different seasons. Design schematics and capacities and operation of heat pumps will be documented. The fire station systems need to be repaired or replaced to meet the particular operating requirements of this building type. A preliminary budget allocation of $100,000 is proposed for this testing, investigation, documentation, analysis, and training, which will lead to a best practice application, design and operations guide for use with existing and future installations.

Future costs for geothermal system upgrades and possible replacement have not been determined or included in the Plan. External funding from governments and utility companies will support this work.

3.4 Phasing of Work and Annual Implementation Costs

The table below presents an initial distribution of project costs over the 5-year term of the Plan.

Table 5 5-year implementation plan

Category	Estimated Total Budget	Measure Type	Facility Name	Estimated Cost ($)	Year 1	Year 2	Year 3	Year 4	Year 5
					2020	2021	2022	2023	2024
Lighting	**$353,387**	**Lighting Audits**	Mold-Masters SportsPlex	$9,060			$9,060		
			Acton Arena	$5,520			$5,520		
			Robert C Austin Operations Centre	$3,000			$3,000		
			District One Station (Acton)	$2,673			$2,673		
			District Two Station (Georgetown)	$2,868			$2,868		
			District Three Station - HHFD HQ	$2,451			$2,451		
			Halton Hills Cultural Centre and Library	$6,060			$6,060		
			Acton Library Branch	$2,700			$2,700		
		Lighting Projects - Recommended Measures	Mold-Masters SportsPlex	$181,200				$181,200	
			Acton Arena	$55,200					$55,200
			Robert C Austin Operations Centre	$18,000					$18,000
			District One Station (Acton)	$8,018					$8,018
			District Two Station (Georgetown)	$8,604				$8,604	
			District Three Station - HHFD HQ	$7,353					$7,353
			Halton Hills Cultural Centre and Library	$36,360				$36,360	
			Acton Library Branch	$4,320					$4,320
HVAC & Controls Retrofits	**$2,082,243**	**HVAC Performance Testing**	Mold-Masters SportsPlex	$24,000	$24,000				
			Gellert Community Centre	$16,000	$16,000				
			Acton Arena	$14,000	$14,000				
			Robert C Austin Operations Centre	$9,500	$9,500				
			District One Station (Acton)	$4,454	$4,454				
			Town Hall	$15,350	$15,350				
			Acton Yard - Equipment Depot	$5,000			$5,000		
			Cedarvale Community Centre	$2,500			$2,500		

Category	Estimated Total Budget	Measure Type	Facility Name	Estimated Cost ($)	Year 1	Year 2	Year 3	Year 4	Year 5
					2020	2021	2022	2023	2024
			Prospect Park Pavilion	$1,500			$1,500		
		HVAC & Controls Retrofit	Mold-Masters SportsPlex	$615,768	$153,942		$153,942	$123,154	$184,731
			Gellert Community Centre	$244,000	$122,000	$122,000			
			Acton Arena	$254,080	$76,224	$76,224	$101,632		
			Robert C Austin Operations Centre	$112,625	$28,156			$28,156	$56,313
			District One Station (Acton)	$58,353	$58,353				
			Town Hall	$253,800	$126,900	$126,900			
			Acton Yard - Equipment Depot	$11,392			$11,392		
			Cedarvale Community Centre	$41,630			$41,630		
			Halton Hills Cultural Centre and Library	$121,020	$30,255	$30,255	$15,128	$15,128	$30,255
			Acton Library Branch	$79,890	$39,945	$19,973	$19,973		
			Prospect Park Pavilion	$30,624					$30,624
		System Evaluation + Design Specification development	District Two Station (Georgetown)	$100,000	$20,000	$80,000			
			District Three Station - HHFD HQ						
			Halton Hills Cultural Centre & Library						
			Acton Library Branch						
		Optimization of Systems	District Two Station (Georgetown)	$36,768			$36,768		
			District Three Station - HHFD HQ	$29,989			$29,989		
Operations	$110,478	Ice Plant Optimization	Mold-Masters SportsPlex	$36,995		$36,995			
			Acton Arena	$23,767		$23,767			
		Pool Optimization	Gellert Community Centre	$49,717		$49,717			
Building Envelope	$105,728	Building Envelope	Mold-Masters SportsPlex	$30,200				$30,200	
			Gellert Community Centre	$7,600				$7,600	
			Acton Arena	$18,400				$9,200	$9,200
			Robert C Austin Operations Centre	$5,000			$5,000		
			District One Station (Acton)	$2,227					$2,227
			District Two Station (Georgetown)	$3,187			$3,187		
			Town Hall	$8,000			$8,000		

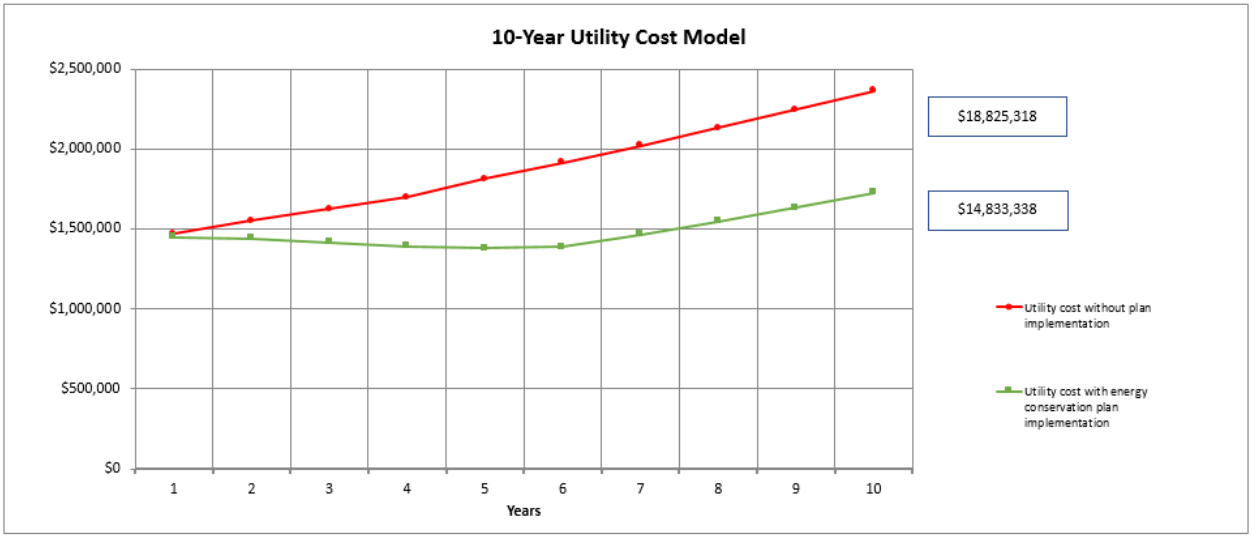
Category	Estimated Total Budget	Measure Type	Facility Name	Estimated Cost ($)	Year 1	Year 2	Year 3	Year 4	Year 5
					2020	2021	2022	2023	2024
			District Three Station - HHFD HQ	$2,723			$2,723		
			Acton Yard - Equipment Depot	$2,400				$2,400	
			Cedarvale Community Centre	$2,300				$2,300	
			Halton Hills Cultural Centre and Library	$10,100			$10,100		
			Acton Library Branch	$11,191			$11,191		
			Prospect Park Pavilion	$2,400				$2,400	
Training	**$24,000**	**Staff Training**		$24,000			$24,000		
	$2,675,836		**TOTAL**	**$2,675,836**	**$739,079**	**$565,830**	**$517,986**	**$446,702**	**$406,240**

3.5 Financial Forecast

3.5.1 Utility Cost Forecast

Figure 2 shows the 10-year annual utility cost forecast for the Town' existing portfolio of buildings, with and without implementation of the recommended energy efficiency measures, based on implementation as outlined in the previous section.

Figure 2 Utility cost forecast over the next 10 years

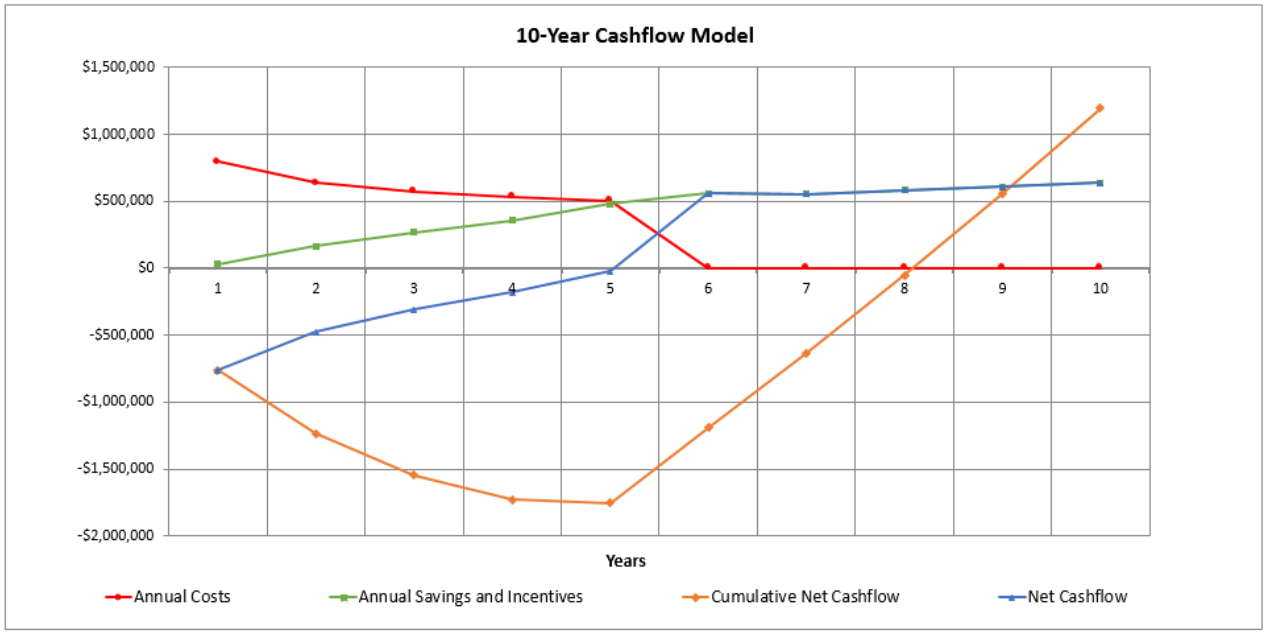


With current utility price escalation forecasts, the Town's annual utility costs can be expected to rise from $1.47 million in 2018 to $2.37 million in 2028, for a ten-year total spend of $18.8 million. Implementation of the measures recommended under the Portfolio Energy Optimization Strategy is projected to lower that expenditure by almost to $4 million over 10 years.

3.5.2 Cash Flow and Internal Rate of Return

The cashflow model in Figure 3 and Table 6 below includes energy efficiency project costs, energy savings and utility incentives, together with an allowance of $50,000/year for external resources required to support implementation (Implementation Support costs). The model provides an internal rate of return of 9%.

Figure 3 Cashflow model



The 10-year costs, savings, and incentives, including cost inflation and utility price escalation, are summarized below. Financial model assumptions are included in Appendix C: Data Assumptions.

Table 6 Cashflow model

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Total
Project costs	$747,598	$585,355	$524,073	$483,115	$452,254	$0	$0	$0	$0	$0	$2,792,395
Implementation support costs	$50,000	$51,250	$52,531	$53,845	$55,191	$0	$0	$0	$0	$0	$262,816
Total cost (with inflation)	**$797,598**	**$636,605**	**$576,604**	**$536,959**	**$507,445**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,055,211**
Incentives	$12,787	$53,530	$58,151	$50,973	$50,674	$34,681	$0	$0	$0	$0	$260,797
Savings	$20,232	$109,223	$208,809	$306,743	$432,159	$527,452	$554,443	$582,597	$610,426	$639,896	$3,991,980
Incentives + Savings	**$33,019**	**$162,753**	**$266,961**	**$357,716**	**$482,834**	**$562,133**	**$554,443**	**$582,597**	**$610,426**	**$639,896**	**$4,252,777**
Cumulative Net Cashflow	-$764,579	-$1,238,432	-$1,548,075	-$1,727,318	-$1,751,929	-$1,189,796	-$635,353	-$52,756	$557,669	$1,197,565	
Net Cashflow	-$764,579	-$473,853	-$309,644	-$179,243	-$24,611	$562,133	$554,443	$582,597	$610,426	$639,896	

Note that costs and savings include escalation rates as listed in Appendix C: Data Assumptions.

3.6 Performance Indicators

The Town is already tracking its energy and environmental performance and reports on progress internally and externally. The following additional performance indicators are recommended as the most relevant, easily managed and measured metrics that will be effective over the long term.

a. Monthly energy data tracking – *already being done*
b. Energy savings – measuring progress against targets on an annual basis ($ cost savings)
c. Number of buildings/systems under BAS control
d. Targeted number of energy efficiency measures achieved and progress vs the target
e. Greenhouse gas emissions reduction (absolute, %)

4 RENEWABLE/LOW-CARBON ENERGY PROCUREMENT STRATEGY

On May 6, 2019, Town Council issued a Climate Change Emergency Declaration that included a goal of becoming a net zero municipality by 2030. Use of low-carbon/renewable energy will help move the Town towards the achievement of that goal. Ontario has the advantage of low-carbon electricity, shifting the focus of carbon reduction programs to natural gas and gasoline. The heart of the low-carbon energy supply strategy is to minimize, and where practical eliminate, combustion of fossil fuels in buildings and vehicles (addressed in Section 5). With the current low price of natural gas, life-cycle economic analysis which factors in future expectations for carbon pricing is necessary to make the business case.

4.1 Onsite Renewable/Recoverable Energy

The Town's first priority is energy efficiency – making the Town's current systems and existing buildings as efficient as possible – which offers a good return on investment. Adding onsite energy recovery and renewable energy is initially more costly and generally provides a lower return on investment, particularly for existing buildings. Advances in technology together with carbon pricing and utility rate escalation can be expected to improve these economics over time. The Town's sustainability policies can direct their inclusion in new buildings and major renovations and be regularly updated as technology and economic conditions change, as discussed in Section 7.2. Standalone renewable energy projects should be evaluated alongside other opportunities based on their cost-effectiveness in delivering GHG emissions reductions.

4.1.1 Heat Recovery

The first stage of low-carbon energy supply in buildings is to recycle internally generated heat. Electrical rooms and computer suites, dehumidification of pool enclosures and ice rinks and heat reclaim from refrigeration compressors (already in place for new arenas) are natural candidates. Recovering heat from exhaust air and waste-water discharge can also be considered where heating and ventilation systems are redesigned wherever practical to recover heat which is now discharged to drain or to atmosphere. Air-source heat pumps, which extract heat from outdoor air, can displace gas consumption in HVAC units and to replace window air conditioners and local electric heaters.

4.1.2 Geothermal

The Town already uses ground-source heat pump (GSHP) installations, which extract heat from the ground during the heating season and replace it in summer with the heat output from the air conditioning cycle. GSHP technology brings the added benefit of more efficient air conditioning which lowers peak electrical demand in summer months. Studies to date indicate that ground conditions in Halton Hills are favourable for GSHP installations.

To further reduce gas consumption, GSHP installations should be considered for all buildings. For existing buildings, this will call for deep retrofits where the existing HVAC system would be replaced with heat pumps and a geothermal field of horizontal or vertical boreholes. Such retrofits fall outside the scope of this plan and their costs are not included in the financial forecast. Given the cost of GSHP

installations, the most economically viable applications will be where substantial parts of the existing system have reached end of life and avoided replacement costs offset the capital investment in the project, or in new construction projects.

4.1.3 Solar Photovoltaics

There is limited potential for generating substantial amounts of energy through solar photovoltaics on rooftops of Town facilities due to high costs and the invasive nature of retrofitting existing buildings with solar arrays. No new facilities are currently planned over the next 5 years, but the Town should consider requiring that every new facility either include solar PV generation, or be solar-ready with the necessary wiring. This requirement can be extended to the wider community, beyond Town facilities (and beyond the scope of this Corporate Energy Plan), and opportunities can be explored to provide incentives to the community to increase solar energy generation.

The Town recently completed a solar streetlighting pilot project in partnership with Wenjiang, Halton Hills' Sister City in China. The Town will continue to take advantage of such partnerships as and when the opportunity arises.

Rooftop solar photovoltaic systems have been installed in 3 facilities at the Town of Halton Hills, as listed in the table below, and generate approximately 1 megawatt (MW) of electricity per year. This can power between 150 – 210 homes per year.

Table 7 Halton Hills Community Energy Corporation – Solar Array System Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (kWh)
11620 Trafalgar – Robert C Austin Operations Centre (100 kW FIT 4.0)													
2017								16,713	16,093	11,154	6,420	4,721	55,101
2018	6,232	6,136	14,475	13,776	19,334	18,304	19,498	15,422	13,133	8,151	3,637	3,761	141,859
2019	6,568	6,277	11,860	12,117	13,058	16,643							66,523
Subtotal													263,483
221 Guelph St, Georgetown – Mold-Masters SportsPlex (450 kW FIT 3.0)													
2017													0
2018	13,019	20,559	58,518	62,432	89,455	86,094	92,503	70,225	53,835	31,719	10,721	12,893	601,973
2019	20,754	20,729	41,229	52,667	66,507	86,619							288,505
Subtotal													890,478
415 Queen St, Acton - Acton Arena (200 kW FIT 4.0)													
2017							40,513	41,901	37,028	22,842	11,406	8,845	162,535
2018	11,305	11,829	33,754	34,283	48,948	47,546	51,032	39,856	31,039	18,008	5,245	6,309	339,154
2019	12,730	10,184	26,657	26,468	36,794	47,658							160,491
Subtotal													662,180
												Total since installation:	**1,816,141**
												2018 total:	**1,082,986**

4.1.4 Solar Thermal

Where practical, new buildings and major renovations will be designed with south-facing ventilation air intakes and "solar wall" preheating.

Solar thermal will be considered for new and existing domestic hot water and pool water heating applications where the life-cycle economics, including utility incentives and forecast carbon pricing, make sense.

4.1.5 Low-Carbon Design Brief

The Low-Carbon Design Brief is a new approach recommended to ensure all capital projects fully consider least-carbon options and avoid like-for-like equipment replacements and conventional designs. It presents the concept, schematic design and plant capacities of near- or net-zero new buildings or those about to undergo a major plant replacement or renovation. For new buildings and major renovations, it would form part of the design team's scope of work. For existing buildings, it would be prepared in advance of major plant and equipment replacements. The Low Carbon Design Brief is described in more detail in Appendix F.

4.2 Alternative Carbon Reduction Approaches

The Town has an option to supplement onsite renewable energy generation with procuring renewable energy through arrangements such as power purchase agreements and renewable energy credits. Based on current emissions, the estimated cost for carbon offsets to mitigate the Town's GHG emissions would be in the range of $125,000 – $145,000 a year. These expenditures would be significant and will only be considered once the opportunities to optimize energy efficiency and onsite renewables and heat recovery are exhausted.

Virtual net metering is a good strategy to encourage production and purchasing of renewable energy within the community. Currently, this strategy is not available to Halton Hills Hydro due to regulatory restrictions. As and when changes to the regulations are considered, this strategy could become available. Although beyond the scope of this Corporate Energy Plan, opportunities can be explored with the Halton Hills Hydro to provide incentives to the community to increase solar energy generation.

4.3 Performance Indicators

The Town is already tracking its energy and environmental performance and reports on progress internally and externally. These additional performance indicators are strategically chosen as the most relevant, easily managed and measured metrics that will be effective over the long term.

a. Renewable energy targets established (% of total energy from renewable sources) and progress against targets measured
b. Share of Town facilities' total energy use that comes from renewable energy
c. Share of existing geothermal systems working optimally or # of facilities running on geothermal
d. Gas use reduction ($ cost savings, %)
e. Greenhouse gas emissions reduction (absolute, %)

5 LOW-CARBON MOBILITY STRATEGY

As part of the connected strategies to address energy and greenhouse gas emissions, this Low-Carbon Mobility Strategy builds upon current initiatives, fleet management and draft Corporate Fleet Management Strategy[3] to address the replacement of current vehicles with low-carbon alternatives, and reduce fuel consumption and emissions in current fleet vehicles and employee commuting. This strategy also looks at the links and interrelationships with other proposed low-carbon strategies, including the Green Development Standards, Corporate Sustainable Building Policy and Community Energy Plan.

This strategy has been developed in consultation with the Public Works Fleet Coordinator, Senior Sustainability Planner and Energy Coordinator, Transit Supervisor, Manager of Transportation and Development Engineering, Corporate Asset Manager, SouthWestern Energy Business Service Manager, and President and Chief Executive Officer of Halton Hills Hydro.

5.1 Background

Transportation is responsible for 28% of Canada's carbon emissions[4] and one of the areas where emissions are increasing year over year. Internal combustion engine vehicles produce greenhouse gas emissions, as well as consume non-renewable resources and create health risks associated with tailpipe pollutants such as carbon dioxide, methane and nitrous oxide.

On May 6, 2019, the Town of Halton Hills Town Council issued its Climate Change Emergency Declaration outlining the need to reduce overall emissions to zero by 2030, with specific references that impact the Low-Carbon Mobility strategy, including the following:

- *Transition the Town's fleet to electric vehicles whenever possible and as soon as possible*
- *The Town encourage staff and the public to switch to plug-in vehicles by installing more EV charging stations at Town facilities beginning with Town Hall, and further strategies (such as preferred parking spots) be considered to encourage the switch to electric and high efficiency vehicles by the public.*

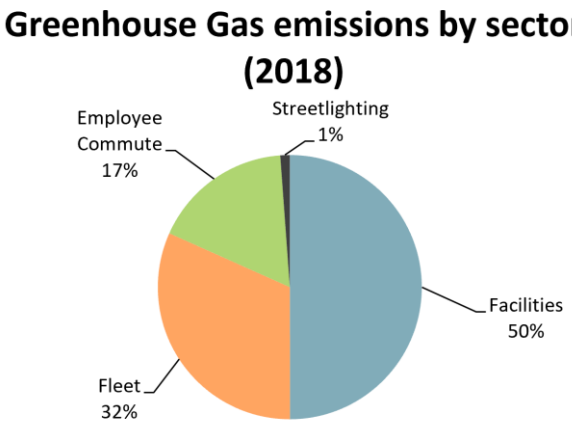
The Town of Halton Hills owns, operates and maintains approximately 213 vehicles and other equipment for the Recreation and Parks, Fire Services, and Transportation and Public Works Departments. These vehicles are essential to maintain roads and parks, manage water and sewer services, and provide many other community services. The large majority of vehicles are powered by diesel fuel or gasoline.

In 2018, fleet vehicle use made up 31.7% (1,298 tonnes of CO2e) of the Town's greenhouse gas emissions. Employee commuting made up 17.2% (702 tonnes of CO2e). The most recent breakdown of greenhouse gas emissions by sector is as follows.

[3] The Town of Halton Hills Corporate Fleet Management Strategy Draft Submission March 13, 2019 by GM Blue Plan Engineering

[4] Greenhouse gas sources and sinks: executive summary 2019 (https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/sources-sinks-executive-summary-2019.html)

Figure 4 Town of Halton Hills Greenhouse gas emissions by sector (2018)[5]



As the town has grown, the fleet size has increased along with greenhouse gas emissions – with a 26.5% (272 tonnes CO2e) increase since the baseline year of the previous Corporate Energy Report (2013). As the population of the Town is expected to continue to grow over the next 5 -10 years, aided by the planned Vision Georgetown development, the mobility segment of emissions will continue to increase as Town services expand, employee numbers rise and more fleet vehicles are required.

The Town has already taken substantive steps to address fleet and commuting emissions. New vehicles are required to be multi-use and "right-sized" – the smallest vehicle possible to do the job required. Diesel vehicles use biodiesel fuel blends with 20% biodiesel (B20) in the summer and 5% biodiesel (B5) in the winter[6]. An electric ice resurfacing machine for the ice rinks has been tested. Electric Vehicle (EV) charging stations have been installed with 14 chargers at Mold-Masters SportsPlex, 2 chargers at Acton Arena and 2 at the Halton Hills Hydro Administration building.

5.2 Approach

The following builds on current successes and existing practices, as well as the recently completed Corporate Fleet Management Strategy, to reduce greenhouse gas emissions from fleet and commuting vehicles.

The primary focus is on making the best of what the Town already owns, setting up organizational structures and processes and developing an integrative plan with set goals. This is particularly critical for low-carbon mobility, as achieving these goals will take time. Low-carbon vehicle technology is developing rapidly but currently there is limited or no product availability for most types of fleet vehicles. Current stock is often in testing stages, only produced by a few manufacturers, has limited features or models and high purchase prices. Some automakers and start-ups are committed to producing electric fleet vehicles but the vehicles will not be available for a few years.[7] When they

[5] Source: 2018 Inventory for Town of Halton Hills

[6] "Biodiesel is diesel fuel made from vegetable oils, animal fats, or recycled restaurant greases. It's safe, biodegradable, and produces less air pollutants than petroleum-based diesel" (Source: US Department of Energy https://www.fueleconomy.gov/feg/biodiesel.shtml).

[7] https://sustainability.ups.com/media/UPS_GreenBiz_Whitepaper_v2.pdf

become available and affordable, the Town will be well positioned to incorporate these options into the fleet.

This strategy focuses on:

- Ensuring organizational readiness for technological advances in new vehicles and fleet management, as well as increases in electric vehicle adoption
- Making the best use of the current fleet and maintenance resources
- Identifying opportunities to replace end-of-life vehicles with electric options, when possible.
- Developing standards, processes and infrastructure to ensure and prepare for a low-carbon/zero carbon

5.3 Planning and Procurement

Set up a Low-Carbon Mobility subcommittee. The mandate of this subcommittee is to determine the low- or zero-carbon mobility goals for the Town, how they impact vehicle purchasing, new facility design and electric vehicle (EV) infrastructure, as well as how ongoing progress towards the goals will be tracked. At minimum, the subcommittee would:

- Coordinate EV charging infrastructure implementation
- Share testing results of low-carbon vehicle technology under consideration and identify implementation implications
- Identify low-carbon mobility maintenance considerations for fleet and EV charging stations
- Identify funding opportunities such as incentives, grants and paid advertising on EV charging stations
- Contribute to the development of a Low-Carbon Design Brief for new facilities, when required, incorporating alternative transportation options, vehicle charging, and operations and maintenance considerations.

This subcommittee could include Fleet management, Fleet maintenance, the Office of Sustainability, Halton Hills Hydro or SouthWestern Energy, and Facility representatives.

Collect data on vehicle use. As recommended in the Corporate Fleet Management Strategy, the first step to greening fleet operations is collecting data and knowledge on how vehicles are used within the Town's fleet, ideally through an automatic vehicle location system which uses global positioning system (GPS) data. This will allow tracking of vehicle use, minutes of idling and tracking routes. Most importantly it will inform how routes can be redrawn to make the most efficient use of vehicles and pinpoint idling reduction opportunities and guide the development of an informed idling reduction policy.

Centralize fleet procurement and cost tracking. This is critical to ensure low carbon fleet options meet the Town's needs, provide the best value and further Town goals. Considerations such as new technology, maintenance and operations will require input from inhouse subject matter experts and fleet users and should be incorporated consistently.

Consider lifecycle cost and low carbon objectives when replacing vehicles. Consideration of lifecycle cost and strategic objectives when fleet vehicles are due for replacement, will help make the case for considering low carbon and electric vehicle options. Although electric vehicles have a higher initial cost, fuel costs and maintenance are significantly lower than internal combustion engine vehicles (ICEVs).

Fuel costs are approximately 60-70% less and maintenance is 30 – 35% less for first 8 years of ownership before battery replacement[8]. Electric vehicles can save approximately $1,800 - $2,500 per year in fuel and maintenance costs and incentives for green vehicle purchases can further reduce the lifecycle cost (as below).

5.4 Greening Current Fleet

Knowing more about how the current fleet operates also provides an opportunity to reduce greenhouse gas emissions. This includes:

Fleet management. Fleet management software will provide the data on how the fleet is used and the opportunity to make sure fleet routes are time and resource efficient. Idling reduction opportunities can also be identified.

Idling reduction policy. An idling reduction policy should be developed, ideally from the information gathered from the fleet management software. The policy will outline specific rules to reduce fuel use and GHGs from idling fleet vehicles and will be developed from knowledge of fleet vehicle requirements and driving behaviour. It would be developed by engaging fleet drivers and be integrated into a green driving program. A separate anti-idling policy can be developed for visitors to Town buildings.

Training. Green driving training could build on the idling reduction policy and integrate other green driving techniques including driving for fuel efficiency and route optimization. Engaging staff will help develop a culture of fuel efficiency and low-carbon mobility and will provide feedback from those with the greatest knowledge of driving and operating fleet vehicles.

5.5 Low-Carbon Fleet Replacement Options

Transitioning fleet vehicles immediately to electric vehicles will be constrained by available technology and cost. A review of the Town's planned fleet purchases and market scan indicates few opportunities for replacement with electric fleet vehicle options without significant cost, based on current prices. Options in the market for electric fleet vehicles are limited, often in early stages of development and carry a significant upfront cost. Initial maintenance may have to be outsourced until Town staff are trained in electric fleet maintenance.

As a result, the immediate focus should be on developing the electric vehicle infrastructure to prepare for staff and community personal vehicles, training for maintenance and potentially investing in an EV car to familiarize staff and public with electrically powered vehicles.

Stay connected to the market and other fleet managers. Although the current options may not be feasible immediately, low-carbon technology is developing quickly. Continuing to be well connected with other municipal fleet staff, which will ensure the Town can learn from others and keep on top of current technology.

Testing an electric vehicle. Purchasing an electric car for Town business would provide a number of benefits including reducing the greenhouse gas emissions of town business, demonstrating commitment

[8] As per Charge Up Ontario: A Guide for Businesses to invest in Electric Vehicle Charging Stations https://www.partnersinprojectgreen.com/wp-content/uploads/2017/01/PPG_Charge-Up-Ontario_EVSE-Report-UPDATED-MARCH_1_2017.pdf

to low-carbon mobility and help familiarizing staff and public with the technology. This will also allow fleet staff to become familiar with operating and maintaining an electric vehicle ahead of electric fleet vehicles being widely available. Current rebates for EVs from the Federal Government for up to $5000 for certain vehicles would lower the upfront cost of purchase. This cost is not included in the overall project budget costs.

Electric vehicle maintenance training. Current maintenance of vehicles is done by the Fleet, Fire and Halton Hills Hydro staff. They would require training for the maintenance and operation of EV fleet vehicles, although only when the vehicles they maintain are replaced by electric ones.

5.6 Low-Carbon Mobility Infrastructure

5.6.1 EV charging stations

Currently there are three locations with Town-owned EV charging stations. There are 7 dual charging stations (14 charging spots) at Mold-Masters SportsPlex, 1 dual charging station at Acton Arena, and two single charging stations at Halton Hills Hydro, although only one of those is available to the public outside of business hours (8am – 4pm Monday to Friday). Other privately-owned charging stations are available. There is no cost to the public to use these charging stations.

Currently the charging stations are used fairly frequently, as compared with similar installations[9], with 303 unique charges in 2018.

Table 8 Summary of EV charging stations and consumption

Site	Number of Charging Stations (Dual)	Average Consumption (kWh/month)	Operating Cost/ month
Mold-Masters SportsPlex	7	829.4	$124
Acton Arena	1	194.3	$29
Halton Hills Hydro	2	N/A	N/A

5.6.2 Expanding the infrastructure

It is recommended that the Town continue to expand the EV charging network to support the increase in electric vehicles. The next likely opportunity to install EV chargers would be Town Hall. The ducts for Level 2 chargers are already in place and a quote has already been obtained for installation and has been included in the costs for recommended measures. Level 2 chargers can take between 2-3 hours to provide a significant top up, depending on the vehicle.

Level 3 charging stations would not currently be recommended for Town Hall or any other municipal building. Also known as Direct Current Fast Chargers (or DCFC), these use a 480 volt system and can charge a vehicle to 80 per cent in about 30 minutes.[10] Although quick, the costs of Level 3 chargers are significantly higher than the Level 2: between $30,000 and $50,000 per single Level 3 charger, compared

[9] As per Charge up Ontario report, on average in 2016, workplace EV charging stations saw 167 charges per year and retail stations saw 190 charges per year.
[10] http://www.mto.gov.on.ca/english/vehicles/electric/charging-electric-vehicle.shtml

with $2,500 to $4,000 per Level 2 charger.[11] Installation costs vary with building configurations and potential additional transformer costs needed to handle the increased electrical load.

In the future, Town EV charging station installations could consider financing from advertising, as is already done in California and elsewhere. This would entail renting the charging locations for advertising space, potentially adding revenue. An alternative would be charging for service, where users would pay for the electricity, or "charging-as-a-service" where the chargers are leased rather than owned and would also entail drivers paying for use.

5.6.3 Additional EV charging station locations

When undertaking a major renovation of a facility or new construction, installing EV charging stations should be part of Low-Carbon Design Brief. This would include the consideration in the major renovation of the Gellert Community Centre.

5.7 Low-Carbon Mobility Measure Implementation Costs

Table 9 Low-carbon mobility measure implementation costs

	2019	2020	2021	2022	2023	2024	2025+	Total
EV charging station Town Hall		$27,000						$27,000
EV Maintenance Training [12]				$6,500				$6,500
EV Town vehicle[13]				$37,500				$37,500
TOTAL		**$27,000**		**$44,000**				**$71,000**

5.8 Employee Commuting

As the Town of Halton Hills has no direct control over employee commuting patterns and emissions, the following will help reduce staff commuting and increase take up of lower carbon modes of commuting. These are no cost/low cost or build on other low-carbon strategies, so no additional costs are anticipated.

According to the Town of Halton Hills 2018 Inventory, employee commuting makes up 19% of the overall municipal emissions.[14] Employees primarily drive to work, as can be seen below.

Table 10 Town of Halton Hills employee commuting (2017)

Employee means of commuting (2017)	Percent	Number of employees
Drive	88%	240

[11] Charge Up Ontario

[12] Based on Electric Vehicle Operations and Maintenance Technician training http://www.trainingforsolar.com/EV_Technician.html

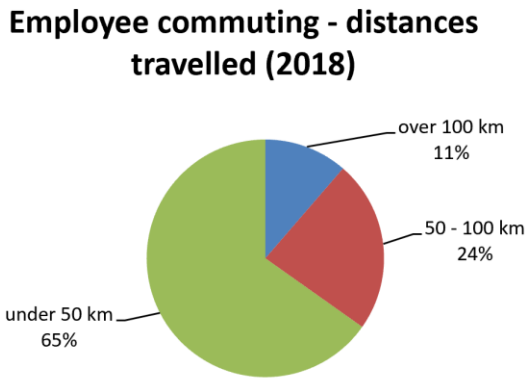
[13] https://www.autotrader.ca/newsfeatures/20190405/every-electric-vehicle-and-plug-in-hybrid-available-in-canada-in-april-2019/

[14] Employee commuting figures not tracked but based on assumptions of distances travelled from employee home locations as per 2018 Inventory.

Employee means of commuting (2017)	Percent	Number of employees
Walk	2%	5
Bike	2%	5
Passenger	8%	22
TOTAL	**100%**	**272**

About 34.8% of the employees travel 50 km or more to get to work but make up 72.3% of the distance travelled and the emissions created (463 tonnes CO2e).

Figure 5 Distances travelled by Town employees



5.8.1 Low-Carbon Commuting Recommendations

Although over half the Town employees have a short commuting distance, focus should be on reducing commuting for employees travelling over 50 km, who make up the larger part of the GHG emissions. Strategies include:

- Continue to promote Smart Commute and other ride sharing as well as other alternative modes of transportation.
- Establish a telecommuting policy so employees can work from home and hold meetings by conference call. This will reduce employee travel time and have the additional benefit of providing more space flexibility at Town Hall, which was built to hold approximately 100 staff and now has about 200.
- Provide incentives for employees to consider plug-in electric vehicle or hybrid vehicle options, provide information about electric vehicle rebate programs and provide the infrastructure for employees to charge electric vehicles at work. Once these initiatives are tested with Town staff, they could be extended to the wider Town community.
- Purchase a plug-in electric vehicle that can be used by employees so they become familiar with electric vehicles. Experience at Halton Hills Hydro from their purchase of a plug-in EV, as well as

other studies[15], shows people are more comfortable buying an EV once they know how they operate one and where charging stations are located.

5.9 Performance Indicators

The Town is already tracking its energy and environmental performance and reports on progress internally and externally. These additional performance indicators are easily managed and measured metrics that will be effective over the long term.

a. Number of EV charging stations
b. Share of fleet that is electric (# of electrically powered vehicles)
c. Employee commuting reduction (GHGs and %)

[15] Unplugged: Myths block road to the electric car dream (BC Hydro), pg. 6 https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/news-and-features/Report-unplugged-myths-block-road-to-EV-dream_April%202018.pdf

6 LOW-CARBON FINANCIAL STRATEGY

There are three components of the strategy for meeting the Town's carbon reduction goals and financing the investments which will be required in facilities and fleet. The goal of the Low-Carbon Financial Strategy is to establish funding mechanisms for implementation of the energy efficiency, renewable energy and low-carbon mobility strategies. The strategy should be coordinated with the Town's long-range financial planning so that it is a priority.

6.1 Funding Energy Efficiency Projects

First, energy efficiency projects provide good returns on investment in the up-front costs of retrofits to building systems which are offset by utility company incentives and repaid over time through utility cost savings. These projects have been funded to date through an annual budget administered by the Office of Sustainability and reviewed and managed by the Corporate Energy Team. A model to illustrate the return on investment, based on the energy efficiency measures planned within the scope of the Portfolio Energy Optimization Strategy presented in the Plan, is presented in Section 3.5.2 Cash Flow and Internal Rate of Return. It illustrates how this can work to achieve the projected savings.

The Town's approach to funding the low-carbon strategies should focus on achieving early wins and substantial utility cost and emissions savings. Buildings that have the greatest potential for energy savings should be prioritized along with projects with a high return on investment. Operational improvements can provide early wins as they are generally low/no cost and can generate significant savings. Maximizing any future federal or other greenhouse gas reduction funding program opportunities will require that "shovel-ready" projects are planned and ready to go.

6.2 Long-Term Capital Planning

The second part of the strategy involves ensuring all capital projects are planned, budgeted, designed and implemented to maximize emissions reductions, as an integral part of the long-term decisions being made. Integrating this approach into the Needs Assessment of the Corporate Asset Management Program will be an essential step to ensure long-term success. This requires changes to the project development process to incorporate an integrated design process and allow time for consideration and analysis of least-carbon alternatives to like-for-like replacements and conventional designs. Through an integrated design process all stakeholders, including operations and the Office of Sustainability, would be included at the initial design stage to ensure lifecycle costing, ongoing operations, sustainability and low-carbon considerations are incorporated in the design. This design should be informed by high-performance energy and water targets, power density and service level metrics to ensure buildings are designed to perform as expected. Additional funding will also generally be required for new system concepts, building upgrades, heat recovery and renewable energy which are needed to meet the Town's goals and most cost-effective when included as part of these capital projects. Allowances should be included in the Town's long-term capital plans to account for these requirements.

6.3 Financing Low-Carbon Mobility and Renewables

The third strategy component considered necessary to meet the Town's 2030 goal is strategic investment in electric vehicles and infrastructure, and in standalone geothermal and renewable energy projects, funded wherever possible by climate-related grants from higher levels of government. Preparation of a renewable energy plan is recommended to identify the best technologies and

applications for the Town's existing fleet and buildings and develop schematic designs, capital budgets and business cases so that prompt applications can be prepared as funding becomes available.

6.4 Funding Sources

Since the Town prefers to implement the low-carbon strategies without taking on debt or adding to taxes, potential sources of funding are:

1. **Increase the annual budget allocation.** This would follow the same process to the one already in place with core funding coming from the Town's budget. Additional funding may require deferral of other projects. Utility cost savings and/or grants and incentives will be considered as part of project viability review but, when received, would go back into general revenue.
2. **Establish a Green Revolving Fund (GRF).** Green Revolving Funds are financial mechanisms that recycle the utility cost savings, incentives and/or grants received, and other associated cost savings and revenues, to finance future energy efficiency projects. They are increasingly used by municipalities to create a transparent and accountable source of funding. Variations on GRFs abound, with some putting 100% of utility and other cost avoidance back into the fund while others put back smaller percentage or solely grants and incentives. Initial seed funding is required to get the GRF rolling.

The Town should establish a Green Revolving Fund (GRF) as a means of establishing a predictable and accountable financing source for implementation of the Plan. The GRF also has benefits of positive public perception while driving the early realization of the greatest utility cost savings, alternative funding sources and rigorous monitoring of ongoing performance and savings. The GRF will require dedicated staff time to manage the accounting, communicate results and also actively search and apply for additional sources of funding such grants and incentives. The GRF should scale up over time, allowing staff to develop management and monitoring processes and become familiar with the opportunities and challenges. Further details on establishing a Green Revolving Fund are provided in Appendix G: Low-Carbon Financial Strategy – Green Revolving Fund.

6.5 Performance Indicators

The Town is already tracking its energy and environmental performance and reports on progress internally and externally. These additional performance indicators are strategically chosen as the most relevant, easily managed and measured metrics that will be effective over the long term.

a. Incentives – applied for, received ($ or # of applications)
b. Outside funding (such as FCM) – applied for, received ($ or # of applications)
c. Share of energy efficiency project costs funded through Green Revolving Fund vs from capital budget

7 MANAGEMENT AND ORGANIZATIONAL ALIGNMENT

The transition to a low-carbon future affects every aspect of society – how we live, what we buy, how we move around, the decisions we make every day. For the Town of Halton Hills, this transition will build on a well-established foundation of effective management and a deep commitment to sustainability. In addition to rethinking how buildings work, integrating new technology, and changing the purchasing criteria for vehicles, equipment and products, a successful transition will require additional alignment of management systems and processes and organizational capacity-building.

Actions recommended in this section, along with actions identified in other sections, are summarized in Appendix D: Recommended Organizational Actions.

7.1 Corporate Asset Management Program

The Town's sector-leading Corporate Asset Management program provides the management platform for ensuring that Town assets meet the minimum low-carbon requirements throughout their lifecycle, from planning and acquisition through operations and maintenance to end-of-life decommissioning and disposal. As outlined in Section 6 Low-Carbon Financial Strategy, the Needs Assessment project review will also include fuel efficiency, furthering low-carbon readiness and meeting low-carbon goals. The lifecycle assessment approach already integrated in the program is a pivotal component of success of low-carbon strategies.

7.2 Corporate Sustainable Building Policy and Green Development Standard

The Town's Corporate Sustainable Building Policy provides guidance on new municipal building design and construction. It should incorporate target efficiencies and low-carbon energy and mobility considerations including heat recovery, geothermal, renewable energy generation (solar readiness at minimum), and EV parking and charging station requirements.

Low-carbon considerations should also be incorporated in the Green Development Standard, which guides the construction of all buildings within the Town of Halton Hills. Currently the Green Development Standard does not contain mandatory elements, however, high energy efficiency, low-carbon and renewable energy generation should be prioritized or mandatory to support the Town's zero carbon goal.

As the Green Development Standard is to be updated in 2019, it would be efficient to have it also apply to public and municipal new building design. Municipal buildings could be subject to mandatory requirements, particularly in relation to lifecycle costs, high efficiency and low-carbon energy and mobility considerations.

7.3 New Construction and Capital Improvements

As outlined in Section 6 Low-Carbon Financial Strategy, an integrated design process is a collaborative process bringing together designers, architects, engineers, building managers, operators and users to ensure all design, construction, operation and use considerations over the lifetime of the building are taken into account. Implementing this process will help ensure that highly efficient, low-carbon buildings are built and that they are operated at a high level of performance. Beginning this process early will define the requirements for the Low-Carbon Design Brief that guides the desired end point.

7.4 Performance Monitoring and Reporting

The Town is already using energy data to report on energy performance and meet regularly through Corporate Energy Team meetings to review performance. This reporting, together with additional data that is recommended to be collected, will inform progress towards low-carbon goals. A review of reporting should be included in the Corporate Energy Team meetings to ensure continuous improvement.

Additional data recommended for collection includes:

- Building automation system data – installing building automation systems will not only allow for more precise control of buildings systems but also provide data to ensure building systems only function when required
- Lifecycle costing data in a Work Management System to track and analyze operations and maintenance costs and compare with energy efficiency data
- Automatic vehicle tracking system or automatic vehicle location (AVL) system data - as recommended in the Corporate Fleet Management Strategy, this system will provide data on how fleet vehicles are being used and will identify how routes can be optimized and inform idling reduction policies for fleet vehicles
- Electric vehicle (EV) charger use data – Halton Hills Hydro monitors current installed charger use by tracking the number of chargers and electricity used. As additional EV chargers are installed, ideally Halton Hills Hydro would continue to monitor and report on their use. This information is critical for monitoring growth of EV use and reductions in employee and fleet carbon emissions
- Performance indicators – this Corporate Energy Plan identifies performance metrics beyond energy savings, which are key indicators of progress toward targets and goals. They should be measured and monitored, and reporting of progress on these metrics should be integrated into regular reporting to stakeholders

7.5 Staff Training and Support

Enhancing staff capability in energy management and building automation will be achieved by defining job-specific expectations, providing on-the-job training opportunities and working with service providers to provide necessary training and support. Specific training recommendations are:

- Energy performance management principles including how much energy equipment uses and making the connections between targeted and actual savings and actions taken
- Use of Building Automation Systems to monitor operations and improve performance
- Impact of operations and maintenance on energy efficiency in different building types
- Building operator training on operation of installed geothermal systems once the investigation is complete, operation has been documented and performance has been optimized
- Training on maintenance and operation of electric vehicles for fleet operations when purchase of electric fleet vehicles becomes possible
- Low-carbon and building equipment-specific training when such systems are installed

- Further green driving training once the AVL system provides feedback on fleet driving performance

7.6 Procurement

Energy and emissions performance is substantially dependent on the products and services of external providers, and some modified procurement practices will help to obtain high-performance outcomes. Some new processes are recommended which rely on continuity and consistency, including major system testing and additional building automation. These require architects, engineers and contractors who are experienced in and have proven track records with the low-carbon design methods, systems and equipment required to meet the goals. To meet these requirements while maintaining the Town's commitment to transparency, accountability and openness, assessment and further development of the following would be required:

- Evaluation criteria for professional services to ensure low-carbon design qualifications
- Standing Offer agreements with contractors including testing and balancing, heating, cooling and ventilation, and building automation system service and supply
- Outcomes-based heating, cooling and ventilation and building automation system service contracts

7.7 Occupant Engagement

Staff and visitors play a significant role in the energy performance of Town facilities and the Town's overall environmental footprint. The Town has an opportunity to clearly communicate their goals, why they are important to all parties and how everyone can play their part in meeting them. Specifically:

- Once comfort issues have been addressed through building optimization, create and enforce a policy relating to temperature setpoints, operating schedules and use of personal appliances
- Encourage and support walking, cycling, electric vehicles and ride-sharing

7.8 Organizational Capacity and Resourcing

Additional resources will be needed for the Office of Sustainability to meet the goals and implement the strategies outlined in the Plan, particularly relating to:

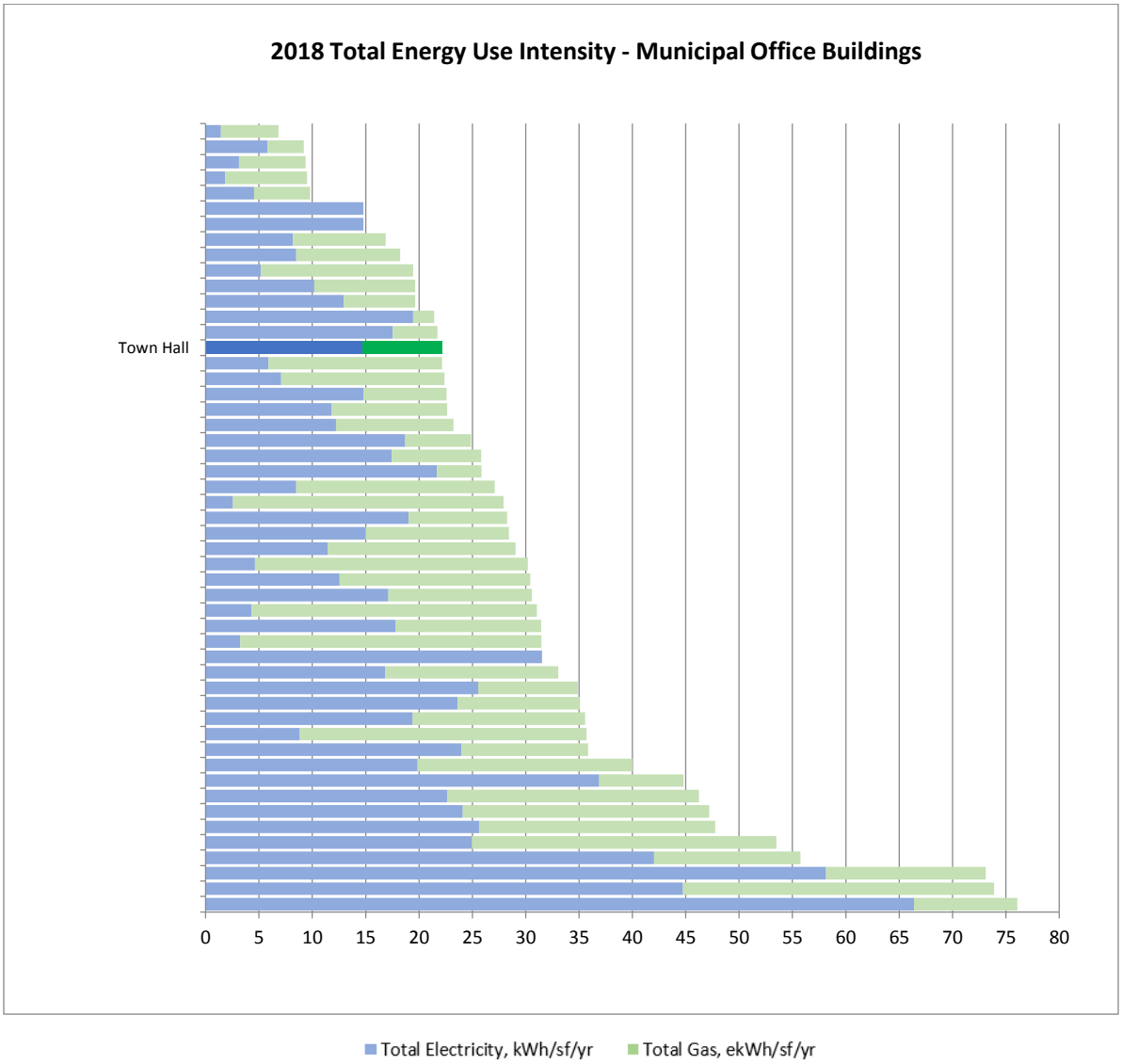
- Creating annual goals and work plans
- Developing approach and policy for evaluating and implementation of all sustainability measures
- Identifying and managing the implementation of energy efficiency and low-carbon projects, including required measurement and verification processes and obtaining utility company incentives
- Identifying and applying for federal, provincial and other funding sources
- Managing staff training programs
- Championing energy efficiency and low-carbon options with other stakeholders through capital planning, project development, procurement and other management processes

- Monitoring and reporting on progress
- Internal and external communications

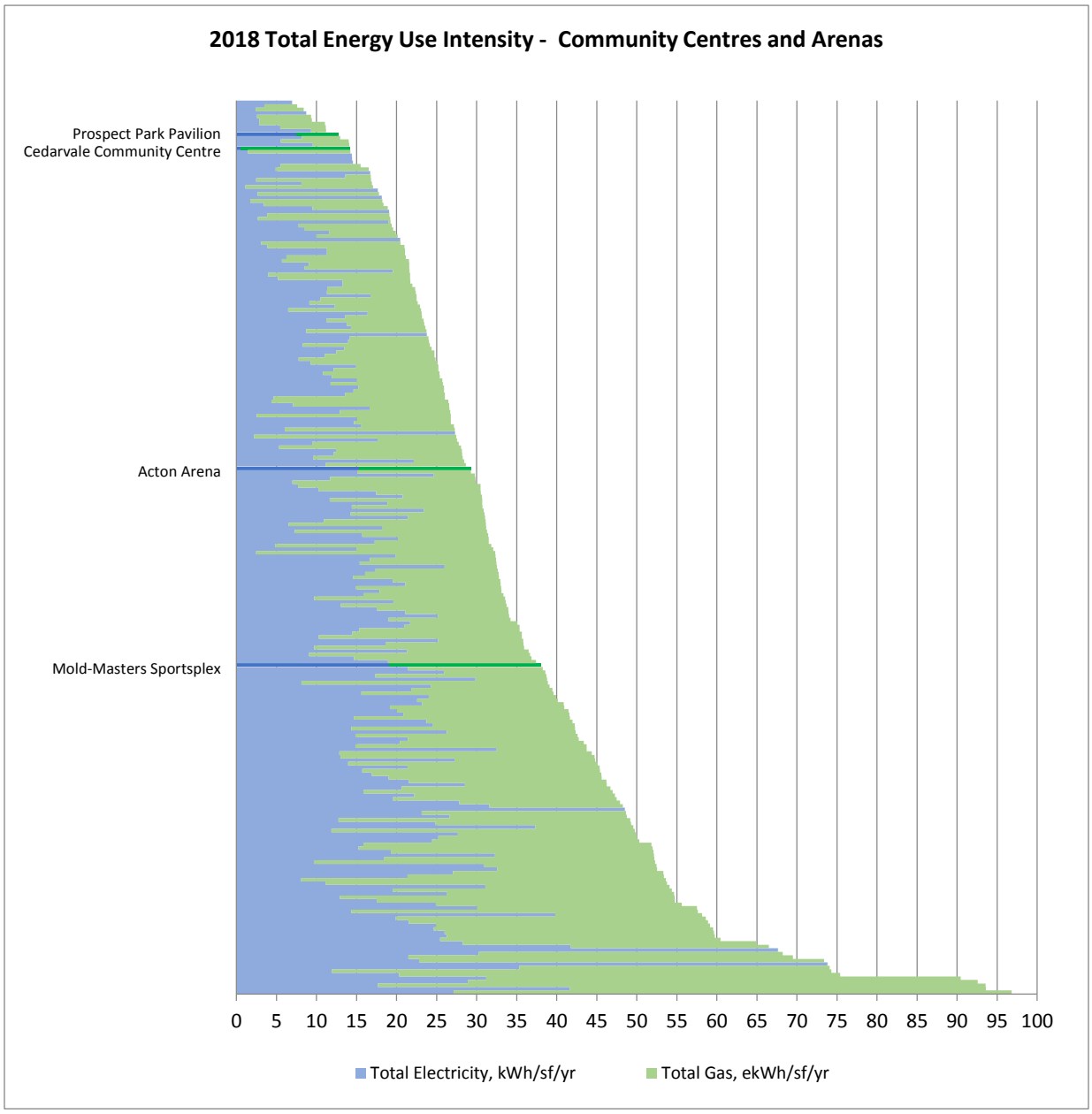
8 APPENDIX A: COMPARISON WITH OTHER FACILITIES

This appendix provides a comparison of total energy use intensity of Town facilities with other facilities of similar types. 2018 energy benchmarking results are weather-normalized and compared with other town and city halls from the Mayors' Megawatt Challenge database.

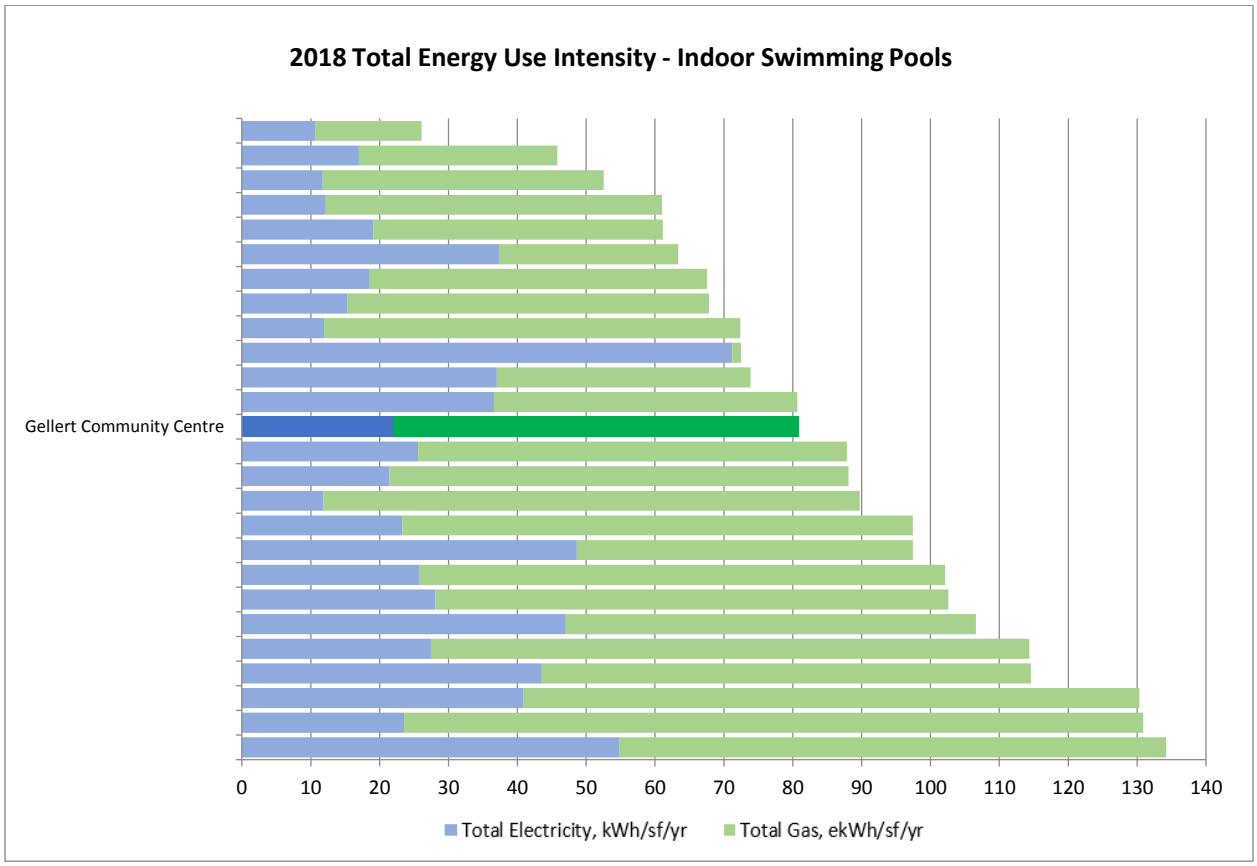
Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
Town Hall	14.7	7.4	22.2



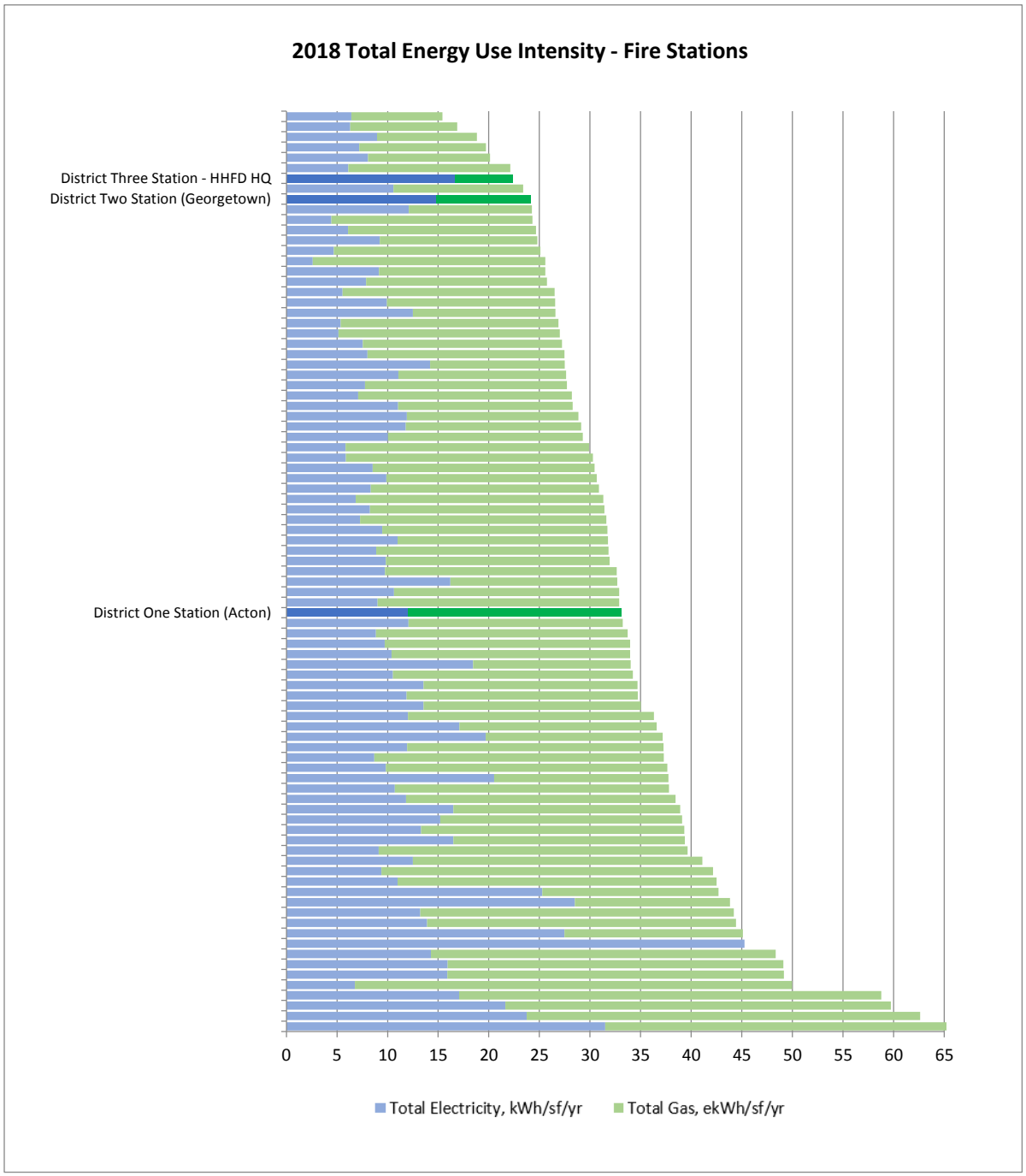
Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
Prospect Park Pavilion	7.4	5.3	12.7
Cedarvale Community Centre	1.4	12.8	14.2
Acton Arena	15.1	14.2	29.3
Mold-Masters SportsPlex	21.4	16.8	38.2



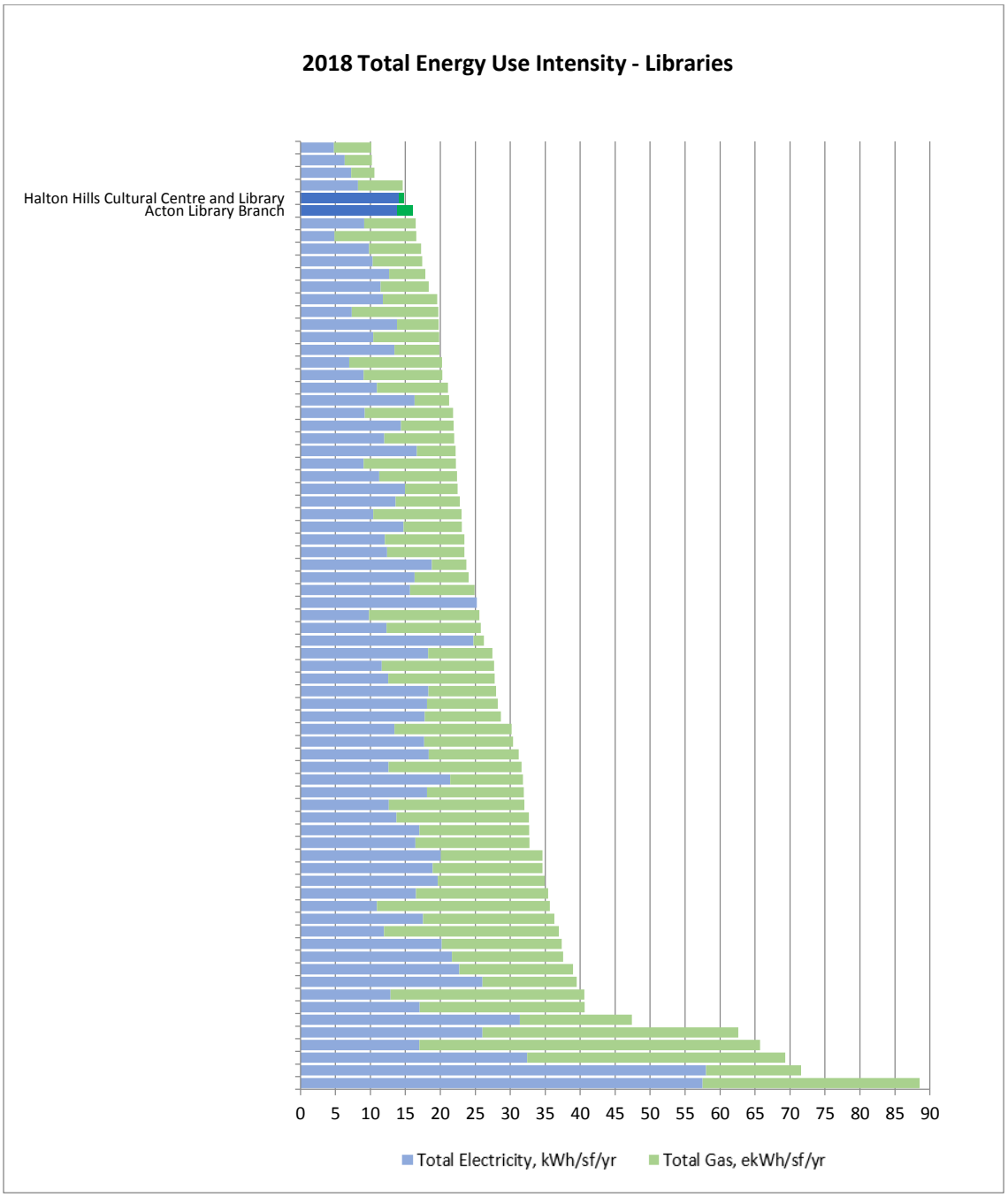
Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
Gellert Community Centre	22.1	58.7	80.8



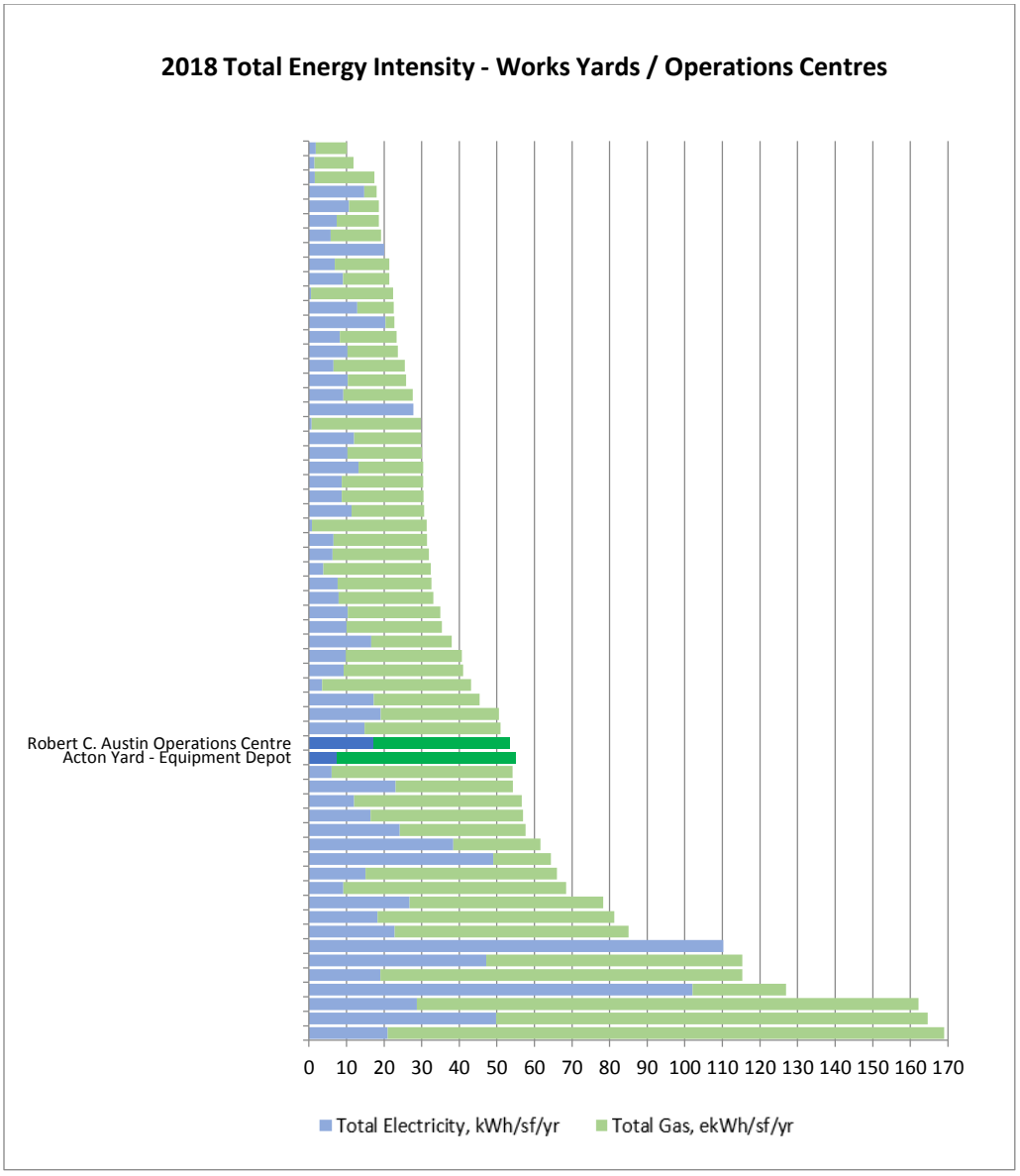
Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
District Three Station - HHFD HQ	16.7	5.7	22.4
District Two Station (Georgetown)	14.8	9.4	24.2
District One Station (Acton)	12.0	21.0	33.0



Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
Acton Library Branch	13.8	2.2	16.0
Halton Hills Cultural Centre and Library	14.2	0.7	14.8



Facility	Electricity Intensity (kWh/sf)	Thermal Energy Intensity (ekWh/sf)	Total Energy Intensity (ekWh/sf)
Acton Yard – Equipment Depot	7.3	47.7	**55.0**
Robert C Austin Operations Centre	17.1	36.1	**53.2**



9 APPENDIX B: DETAILS OF ENERGY EFFICIENCY MEASURES

9.1 Mold-Masters SportsPlex

Table 11 Mold-Masters SportsPlex – existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
Lighting	Lighting in the facility consists of T5, T8 lighting and LED lighting. 80% of the building has T5 & T8 lighting and the remaining 20% has been recently converted to LED lighting. The new expansion lights are being fed through emergency lighting circuit causing the lights to remain ON all the time.	Conduct lighting audit to ensure correct light levels and power densities. Convert all lighting to LED. Retrofit lighting circuits to maximize scheduling. Install photo- and occupancy-controls in accordance with Town standard.
HVAC	Air conditioning is provided to the roughly 40% of the building. Two gas-fired dehumidifiers service the ice rinks. The 17 rooftop units (RTUs) have DX coils and are gas fired to provide fresh air and heating to the common areas, change rooms, and office spaces. Typical size of the RTUs is SF - 7.5 HP and RF - 3 HP. The rooftop units use local thermostats for temperature control. The space conditioning needs are non-uniform with specific air changes for the ice rinks and change rooms/washrooms. Heat recovery from the ice plant is used to preheat DHW. Heating pumps have VFDs. The Alcott rink units are approaching end of life and are due for replacement.	Test air handling units, dehumidifiers, and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor HVAC unit, dehumidifier and heat recovery operation and make necessary control changes. Install VFDs on selected units. Consider alternative heating sources when replacing units. BAS installation for HVAC equipment & web/central control for ice plant controls.
Ice Plant	The ice plant is served by an ammonia-based fluid cooler and runs for 9 months/year. The facility underwent an expansion adding 2 ice rinks which are more efficient than the old rinks. The brine header is uninsulated and the resurfacing water temperature is 140°F. The current operation of the brine pumps is duty/standby.	Test brine pumps and make any indicated changes. Monitor ice plant operation and controls and make necessary changes. Lower resurfacing water temperature to 110°F. Insulate the brine header.

Table 12 Mold-Masters SportsPlex – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
Lighting	Lighting audit, lighting retrofit, controls	$28,886	$190,260	169,917	
HVAC & Controls Retrofit	Performance testing		$24,000		
	Ventilation refurbishment	$19,673	$48,068	91,755	15,776
	BAS installation & ice plant controls integration with BAS	$24,045	$362,000	112,145	19,282
	VFD installation and reprogramming local controllers	$60,113	$205,700	280,363	48,206
Operations	Ice plant controls optimization	$38,588	$36,995	169,917	37,563
Building Envelope	Thermographic scan of building exteriors & minor repairs	$5,465	$30,200	25,488	4,382
TOTAL		**$176,771**	**$897,223**	**849,585**	**125,209**

9.2 Acton Arena

Table 13 Acton Arena – existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
Lighting	The ice rinks are illuminated by LEDs. The lighting system for the overall facility consists of LEDs (50%), T5 and T8 lighting. The T8 and T5 lighting is in the process of being replaced by LED.	Conduct lighting audit to ensure correct light levels and power densities. Convert remaining fluorescent lighting to LED. Retrofit lighting circuits to maximize scheduling. Install photo- and occupancy-controls in accordance with Town standard.
HVAC	Ventilation is provided by air handling units located in mechanical room and rooftop. The HVAC systems are in relatively good shape. The scheduling of the equipment and the SOP need to be reviewed to optimize performance. The thermostats are relatively old (5-10 years) and do not provide any feedback to the equipment. Heat recovery from the ice plant is used to preheat DHW. Primary Heating pumps have been retrofitted with VFDs and set to run at a fixed pre-set speed but were switched off during the site visit. In the old arena the space temperature is maintained by residual heat from the arena dehumidifier, pre-heat from the makeup air unit, and occasionally by the gas-fired radiant -heaters (these are rarely turned on, and only when requested by spectators). The rooftop units are too small for VFD consideration.	Test air handling units, dehumidifiers and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor HVAC unit, dehumidifier and heat recovery operation and make necessary control changes. BAS installation for HVAC equipment & web/central control for ice plant controls.
Ice Plant	The ice plant is served by an ammonia-based fluid cooler and runs for 6 months/year. The facility underwent an expansion adding 2 ice rinks which are more efficient than the old rinks. The brine header is uninsulated and the resurfacing water temperature is 140°F. The current operation of the brine pumps is duty/standby.	Test brine pumps and make any indicated changes. Monitor ice plant operation and controls and make necessary changes. Lower resurfacing water temperature to 110°F. Insulate the brine header.

Table 14 Acton Arena – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
Lighting	Lighting audit, lighting retrofit, controls	$1,796	$60,720	10,566	
HVAC & Controls Retrofit	Performance testing		$14,000		
	Ventilation refurbishment	$6,353	$22,080	14,793	14,858
	BAS installation & ice plant controls integration with BAS	$8,735	$232,000	20,340	20,430
Operations	Ice plant controls optimization	$5,010	$23,767	5,283	15,920
Building Envelope	Thermographic scan of building exteriors & minor repairs	$794	$18,400	1,849	1,857
TOTAL		**$22,688**	**$370,967**	**52,832**	**53,066**

9.3 Gellert Community Centre

Table 15 Gellert Community Centre - existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
HVAC	Water hardness is an issue - often the tempered water clogs the heat exchanger. In 2011, VFDs have been installed on the main circulation pumps. There are 3 pools with varying temperatures. The Dectron unit runs at full speed 24/7 and is not functioning properly with a very low delta across inlet and outlet temperature. No air balancing has been done since the equipment was handed over. The 4 boilers (1 for DHW with the rest serving the pool) have no stages or modulation and work in lead lag sequence. The DHW mixing valve malfunctions leading to "too cold" complaints. Caulking is being carried out on a periodic basis to arrest infiltration and leakage around windows. No mould problems have been noted. The Kinsman Hall has an opportunity to have destratification fans to reduce heat loads during unoccupied periods. The Rooftop units that serve the common spaces such as offices and lobby are small and controlled by a Trane supervisory controller with occupied and unoccupied setpoints and scheduling.	Test boilers and monitor operation to determine whether burner and/or control upgrades required. Test air handling units, Dectron unit and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor HVAC unit, Dectron and heat recovery operation and make necessary control changes. Repair mixing valve and optimize DHW supply temperatures. Install destratification fans in Kinsman Hall. Upgrade Trane Supervisory Control for 7 rooftop units and install BAS that will include all the equipment
Pools	There are 3 pools, each operating at a different temperature. The circulation pumps have VFDs and operate at pre-set constant speed duty/standby.	Add controls to allow pool water temperature reset. Test pumps and modify control to vary speed in accordance with Code requirements. Evaluate liquid pool covers.

Table 16 Gellert Community Centre – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
HVAC & Controls Retrofit	Performance testing		$16,000		
	Installation of destratification fans	$2,969	$18,000		11,496
	BAS installation, pool controls integration with BAS	$11,135	$226,000		43,109
Operations	Pool operation	$12,661	$49,717		49,016
Building Envelope	Thermographic scan of building exteriors and minor repairs	$742	$7,600		2,874
TOTAL		**$27,508**	**$317,317**		**106,495**

9.4 District Three Station – HHFD HQ

Table 17 District Three Station – HHFD HQ – existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
Lighting	The lighting system consists of mostly LED lights with a few areas still using T8 lamps. Most spaces are overlit.	Conduct lighting audit and modify fixtures to ensure correct light levels and power densities. Convert all lighting to LED. Retrofit lighting circuits to maximize scheduling. Install photo- and occupancy-controls in accordance with Town standard.
HVAC	Cooling is provided by 4 split units (2 located on ground level and 2 located on the roof) and two ground-source heat pumps. The bay area is heated by a make up air unit and gas fired radiant tube heaters. The BAS controls the two heat pumps and monitors the geothermal loop. The geothermal system experiences substantial operational and maintenance problems. No commissioning was done and no documentation is available. DHW is supplied by a gas-fired water heater for washrooms and bay area. The bay area doors are controlled and close immediately after the vehicle leaves the bay.	Test air handling units, heat pumps and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor heat pump loop and HVAC unit operation and make necessary control changes. Analyze and resolve geothermal system operation and prepare documentation. Recommissioning of the existing BAS and installation of additional sensors.

Table 18 District Three Station – HHFD HQ – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
Lighting	Lighting audit, lighting retrofit, controls	$3,446	$9,804	20,270	
HVAC & Controls Retrofit/Geothermal Optimization	Geothermal investigation and performance testing		$25,000		
	Ventilation refurbishment	$10,946	$12,901	57,647	4,438
	BAS upgrades	$1,723	$6,672	10,135	
	HVAC optimization	$5,476	$5,476	30,276	1,274
Building Envelope	Thermographic scan of building exteriors & minor repairs	$579	$2,723	3,034	234
TOTAL		**$22,167**	**$67,516**	**121,362**	**5,945**

9.5 Town Hall

Table 19 Town Hall – existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
HVAC	There are 56 heat pumps fed by a glycol loop, with occupied/unoccupied fan control. Auxiliary heating is done by 2 boilers which were recently replaced. A 2-speed cooling tower is to be replaced in 2019. The hydronic pumps have been retrofitted with VFDs but are running at full speed. The heat pumps are at end of life and are due for replacement. Supplemental perimeter heating is provided by electrical baseboard heaters controlled by a timer 7 am to 4 pm. MUA unit has a 5 hp motor with no cooling and a gas-fired burner, supplying 6,000 cfm of fresh air into the ducting of the heat pumps. Humidifier is electric, controlled by humidistat with setpoint at 34%-40%. Exit vestibule heating is working on thermostat and was recently replaced. 6 heat pumps have been replaced with Ecobee controllers. The cafeteria area has a high bay area with east-facing windows which are subject to solar gain and heat losses and occupant complaints.	Test MUA unit and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor MUA unit, humidifier and heat recovery operation and make necessary control changes. Optimize operating schedules. Test boilers and cooling tower and retrofit/refurbish as necessary. Install destratification fans in the cafeteria. Install VFD on the MUA unit with CO2 control. Additional sensors to be installed; BAS installation.

Table 20 Town Hall – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
HVAC & Controls Retrofit	Performance testing		$15,350		
	Ventilation refurbishment	$10,553	$10,333	57,658	2,907
	VFD installation and reprogramming local controllers	$7,538	$4,933	41,185	2,076
	Installation of destratification fans	$1,508	$21,000	8,237	415
	BAS installation	$9,045	$212,000	49,421	2,492
	HVAC optimization	$2,663	$7,933	12,509	2,076
Building Envelope	Thermographic scan of building exteriors & minor repairs	$1,508	$8,000	8,237	415
TOTAL		**$32,814**	**$279,550**	**177,247**	**10,382**

9.6 Halton Hills Cultural Centre and Library

Table 21 Halton Hills Cultural Centre and Library – existing condition and description of recommended measures

System	Existing Condition	Recommended Measures
Lighting	The lighting is typically LEDs and staff complains of overlit areas, especially in the library where ample daylighting is present.	Conduct lighting audit to ensure correct light levels and power densities. Convert fluorescent lighting to LED. Install photo- and occupancy-controls in accordance with Town standard.
HVAC	The building uses a geothermal loop to cool and heat the building with 8 Rooftop units, all controlled by the Metasys BAS. The Rooftop units have schedules and VFDs. The main exhaust fan has an ERV unit. The Geothermal pumps have VFDs and runs on duty/standby operation. There are complaints regarding air quality. The theatre is a high ceiling area and often takes a long time to cool or heat, experiencing a predominant stack effect with the lighting/audio/visual room emitting a large amount of heat. The art gallery requires humidification and has a standalone system; since it is part of the original building, insulation is poor.	Test air handling units, heat pumps and pumps to determine actual flows and pressures, rebalance, retrofit and refurbish accordingly. Monitor CO2 levels and adjust airflows and controls to maintain comfort conditions. Monitor art gallery unit, heat pump loop and other HVAC unit operation and make necessary control changes. Install destratification fans in theatre. Install destratification fans.

Table 22 Halton Hills Cultural Centre and Library – recommended measure cost and savings summary

System	Recommended Measures	Estimated Savings ($/yr)	Estimated Cost ($)	Electricity Savings (kWh/yr)	Gas Savings (m3/yr)
Lighting	Lighting audit, lighting retrofit, controls	$10,370	$42,420	60,997	
HVAC & Controls Retrofit/Geothermal Optimization	Performance testing		$25,000		
	Ventilation refurbishment	$8,538	$33,835	49,551	441
	Installation of destratification fans	$2,511	$18,000	14,574	130
	HVAC optimization	$17,884	$69,185	103,368	1,206
Building Envelope	Thermographic scan of building exteriors & minor repairs	$1,507	$10,100	8,744	78
TOTAL		**$40,809**	**$192,540**	**237,234**	**1,855**

10 APPENDIX C: DATA ASSUMPTIONS

GHG Emissions Factors

20 g CO2e per kWh of electricity (consumption intensity)
1,916 g CO2e per m3 of natural gas

Source: National Inventory Report 1990 - 2017: Greenhouse Gas Sources and Sinks in Canada (submitted in 2019) Part 3, Annex 13 Electricity in Canada: Summary and Intensity Tables

https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2019

Utility Rates

Electricity	2018	0.17	$ per kWh	Source: 2018 inventory
Gas	2018	0.2583	$ per m3	Source: THH actual and projected rates
	2019	0.2655		
	2020	0.2559		
	2021	0.2409		
	2022	0.2737		
	2023	0.2848		
	2024	0.2906		
	2025	0.2956		
	2026	0.2956		
	2027	0.2956		

Escalation Rates

Electricity 5.9%
Gas No escalation rate applied; effective gas rates for each year applied as per note above.
Inflation rate 2.5%

Incentive Rates

Electricity $0.10 per kWh
Gas $0.20 per m3
Incentives are estimated based on current utility company offerings and are subject to change.

11 APPENDIX D: RECOMMENDED ORGANIZATIONAL ACTIONS

Category	Recommended action	Who	Priority
Asset Management	Update Corporate Asset Management Needs Assessment and project review process to include greenhouse gas emissions, energy efficiency, Low-Carbon Design Brief, fuel flexibility and considerations.	Corporate Asset Manager	High
Policies and standards	• Corporate Sustainable Building Policy should incorporate target efficiencies and low-carbon energy and mobility considerations • Update Green Development Standard to include low-carbon considerations and to have it apply to public and municipal new building design	Office of Sustainability, Corporate Energy Team	High
New Construction and Capital Improvements: Integrated design process	For all major renovations and new construction projects, use an integrated design process to determine the design and operation of the facility. This will involve getting everyone who will be involved in the project, from the design phase to construction to the actual day-to-day operations, together right from the start to collaborate.	Manager of Facilities, Sustainability Engagement Coordinator	Medium
Performance monitoring and reporting	Additional data recommended for collection includes: • Building automation system data • Lifecycle costing data in a Work Management System • Automatic vehicle tracking system or automatic vehicle location (AVL) system data • Electric vehicle (EV) charger use data • Performance indicators	Office of Sustainability, Manager of Facilities, Fleet Coordinator	Medium
Staff training and support	Incorporate the following in training: • Energy performance management principles • Use of Building Automation Systems to monitor operations and improve performance • Impact of operations and maintenance on energy efficiency in different building types • Building operator training on operation of installed geothermal systems once their design and operation has been documented and their performance has been optimized • Training on maintenance and operation of electric vehicles for fleet operations when purchase of electric fleet vehicles becomes possible • Low-carbon and building equipment-specific training when such systems are installed • Further green driving training once the AVL system provides feedback on fleet driving performance	Office of Sustainability, Manager of Facilities, Fleet Coordinator	Medium
Procurement	Undertake assessment and further development of the following: • Evaluation criteria for professional services • Standing Offer agreements with contractors • Outcomes-based service contracts	Procurement Manager	Medium
Occupant engagement	Once comfort issues have been addressed through building optimization, create and enforce a policy relating to temperature setpoints, operating schedules and use of personal appliances. Encourage and support walking, cycling, electric vehicles and ride-sharing.	Manager of Facilities	Low

Category	Recommended action	Who	Priority
Organizational capacity and resourcing	Additional resources will be required to meet the goals and implement the strategy outlined in the Plan, particularly relating to: • Creating annual goals and work plans • Developing approach and policy for evaluating and implementation of all sustainability measures • Identifying and managing the implementation of energy efficiency and low-carbon projects, including required measurement and verification processes and obtaining utility company incentives • Identifying and applying for federal, provincial and other funding sources • Managing staff training programs • Championing energy efficiency and low-carbon options with other stakeholders through capital planning, project development, procurement and other management processes • Monitoring and reporting on progress • Internal and external communications	Office of Sustainability	High
Geothermal design and operational standards	From study of current geothermal installations, develop design and operational standards for future installations in other Town facilities.	Office of Sustainability and Facilities staff	High
New building and major facility design considerations	When redesigning or designing a facility, consider: • Low-carbon design focused on reducing fossil fuel use • South-facing ventilation air intakes • “Solar wall” preheating • Solar readiness or solar installations • Alternative mobility considerations such as bike paths and parking, as well as transit or future transit • Electric vehicle charging station opportunities	Manager of Facilities, Facilities staff and Office of Sustainability	Medium
Low-Carbon Mobility subcommittee	Set up a Low-Carbon Mobility subcommittee to determine low or zero carbon mobility goals, how they impact vehicle purchasing, new facility design and electric vehicle (EV) infrastructure, as well as tracking ongoing progress against goals.	Fleet Coordinator, Office of Sustainability, Transportation Manager,	High
Telecommuting policy/strategy	Establish a telecommuting policy so employees can work from home and hold meetings by conference call. This will reduce employee travel time and have the additional benefit of providing more space flexibility at Town Hall.	Office of Sustainability, Sustainability Engagement Coordinator	Medium
Town staff engagement for electric vehicles	Develop engagement campaign to provide staff with information about electric vehicle rebates, possible Town incentives for owning an electric vehicle and provide the infrastructure for employees to charge electric vehicles at work.	Sustainability Engagement Coordinator	Low
Green Revolving Fund	Establish a Green Revolving Fund (GRF) as a means of establishing a predictable and accountable financing source for implementation of the Plan.	Office of Sustainability	High
Performance indicators	Measure and monitor identified performance indicators, as identified in the Plan.	Office of Sustainability	Medium

12 APPENDIX E: SAMPLE SETPOINT POLICY FOR POOLS

The following is a sample setpoint policy for pools that covers identified setpoints, the strategy for managing the setpoint, details and the referenced standard and/or guideline. The setpoint policy makes sure pools are operated consistently, safely and to minimize energy use.

Pool setpoints	Strategy	Details	Reference
Water temperature	As low as possible	Set according to relevant user group and programming between 78F-86F: Children swim class 84F Recreational swimming 80F-85F Competition 76-82F Keep hot tub temperature below 104F	WHO (Guidelines for safe recreational water environments); Aquatic Exercise Association (AEA) guidelines for water temperature
	Reset	At night stop or minimize water heating, continue circulating water as required Experiment with how long it takes to heat the water back up in the morning and use automatic control	
Space pressurization	Negative to surrounding	Keep a negative pressure (0.05-0.15 inches water column (WC)) in pool space to adjacent spaces. 10% more exhaust air than supply as rule of thumb.	ASHRAE; Seresco (natatorium design guide)
Space temperature and relative humidity (RH)	As high as possible within limits (relative humidity (RH)<60%) during heat reclaim, pending the caliber of building envelope	Increase space temperature and relative humidity to as high as comfort allows when no fuel heating is used (summer and shoulder seasons). Keep space temperature 2C above water temperature in heating season, while ensuring no condensation in the wall assembly	ASHRAE, CIBSE, Buildingscience.com
	Reset heating, cooling and dehumidification, as well as fan operation	Minimize HVAC operation (set VFD to minimum, continue heat reclaim if thermal wheel present, use a wider space temperature band for heating and cooling, reduce dehumidification to a level to ensure no condensation in the wall assembly). The reset can be enhanced with the use of a pool cover to reduce evaporation.	

13 APPENDIX F: LOW-CARBON DESIGN BRIEF

The Low-Carbon Design Brief is a new concept considered necessary to ensure that no/low carbon options are evaluated for every capital project and thereby avoid conventional designs for facility renewals and expansions and like-for-like equipment replacements. The Design Brief documents the end-point concept for each individual facility to provide the required services with the least possible carbon emissions. For new buildings, it is incorporated in the scope of work for the design team. For facility additions it ensures effective integration with existing building systems to deliver least-carbon whole-building performance. For equipment replacements it guides the Town and its designers and equipment suppliers in selecting the right equipment to fit into the long-term, low-carbon plan.

The elements of the Design Brief are as follows:

- The fundamental elements of the low-carbon design, including line diagrams and equipment capacities
- Internal heat recovery options from sources such as process equipment, IT and exhaust air and drain water, together with budget costs/incentives, net energy and emissions reductions and impact on heating equipment capacities. Budget costs are to consider economies associated with installation during end-of-life replacement projects
- External heat recovery options from sources such as solar thermal and geothermal with budget costs/incentives, net energy and emissions reductions and impact on heating equipment capacities/elimination
- Additional low-carbon and renewable energy considerations such as electric vehicle charging stations and solar readiness
- Lifecycle cost analysis including forecast costs of carbon offsets

14 APPENDIX G: LOW-CARBON FINANCIAL STRATEGY – GREEN REVOLVING FUND

The following section is a guide to establishing a Green Revolving Fund (GRF), should the Town consider this mechanism as part of its Low-Carbon Financial Strategy. A GRF would recycle utility cost savings, renewable energy revenues, incentive payments and operations and maintenance cost savings to fund the program. It would provide transparency and accountability to taxpayers as well as allow the Town to demonstrate leadership by example.

The GRF would be used to subsidize new energy/green initiatives and support additional staff and resources to complete energy retrofit projects and build organizational capacity. It can finance (in whole or in part) energy efficiency, renewable energy and other sustainability projects, energy studies, pilot projects and other similar energy related activities.

Potential benefits of a GRF:

1. **Creates a formal program of investment:** A GRF requires project clarity, fiscal discipline, accountability, transparency and a financing process that funnels savings from past projects into current spending plans.
2. **Demonstrates the business case for sustainability:** Rather than simply allowing the savings from energy efficiency projects to be absorbed into operating budgets, a GRF tracks the savings distinctly and directs them into future projects—thus creating a measurable return on investment (ROI).
3. **Recycles real efficiency improvements:** instead of using taxpayer dollars to fund the measures.
4. **Conveys reputational benefits** – A GRF can signal the municipal commitment to sustainability and operational efficiency.
5. **Catalyzes a culture shift**: A GRF represents a municipal commitment to larger strategic goals, such as greenhouse gas reductions, and provides a tangible vehicle for achieving them.
6. **Leverages savings into opportunity**: A GRF is great way to capitalize on the savings from energy efficiency projects to promote sustainability in general, whether or not they have financial paybacks.
7. **Tracks performance**: A GRF creates a streamlined process for an institution to distinctly track, manage, and analyze the financial and resource savings resulting from sustainability projects.

Best-practice GRFs rely on capturing cost savings to replenish the fund. It is recommended that the savings be calculated based on actual performance. This entails using a measurement and verification (M&V) approach to directly measure savings while accounting for factors like weather and usage. Some successful funds apply full utility cost avoidance (100% of the avoided operating utility costs, once realized, go towards the GRF) to pay off energy project investments. Variations on this model count smaller percentages of avoided costs going towards the fund and some do not include utility cost avoidance at all (relying on funding from grants and incentives).

Green Revolving Fund for the Town of Halton Hills

Energy efficiency measures identified in this Corporate Energy Plan will enhance building systems and facility operations, reduce maintenance costs and help the Town meet its net zero target. Incremental

costs for more efficient options could be financed by the GRF, providing a win-win scenario as less capital would be requested and lower operating costs will benefit operating budgets.

The development of a GRF for the Town should be an iterative and interactive process. Stakeholders would include the Manager of Facilities, Office of Sustainability, members of the Corporate Asset Management Steering Committee and the Asset Management Network Team. The goal of the initial round of discussions would be to identify barriers to establishing a GRF, develop a strategy for overcoming these barriers, lay the groundwork for building future support and refine the structure of the proposed fund to capture opportunities.

Project Criteria

Project criteria should promote the mission of the fund and be tailored to the actual portfolio of projects that are available for investment. The Town should consider flexibility in project requirements and may need to adapt as the portfolio of available projects changes over time or as unique opportunities arise. For example, a project may compensate for failing to meet financial goals by outstanding performance in other areas such as greenhouse gas reductions. In addition to specific criteria, projects should be prioritized in a way that best allocates limited resources while accounting for the feasibility and timing of projects given other constraints, such as staff availability.

Establishing Financial Flows

Finance staff have a unique understanding of the Town's accounting system and should be involved early in the GRF design process as their buy-in and expertise are crucial. Energy and climate change goals should be included in the current prioritization matrix and budget process, as well as the capital and project review process. It is recommended that the GRF be integrated with current Asset Management processes, including the Needs Identification and Assessment form used for project evaluation.

All stakeholders should also feel comfortable with the cash advance and repayment process. Before any project is undertaken, involved parties must understand:

- Who pays the project invoice, which account will they use and when those funds will be available;
- Which account will be receive repayments over the course of the loan, how often those repayments will occur and the total of each repayment as well as the overall repayment obligation
- How all of the flows of money will appear on the various departmental budgets and balance sheets.

Launching the Fund

Before launching the fund, the first round of funding will be planned (using the savings potential model from the Corporate Energy Plan 2020-2025 as a guide). As projects are being implemented, the planning process will continue for future phases of projects and applications, as well as for fund management, outreach and meetings of the team. Planning for the future is important to efficiently manage the fund, to ensure capital remains effectively invested, and to show stakeholders how the fund is progressing and demonstrate success. The fund should be formalized with a charter, memorandum of understanding, formal project criteria and other guiding documents made available to all stakeholders. The Town should consider developing a website for the fund to provide information about the fund, post official documents, provide tools and resources and report on progress internally and to the public.

Implementation
To reduce risk and build confidence, it is recommended that the Town undertake a soft launch in which the first round of investment targets projects that are expected to be straightforward. It is also recommended that the Town begin with a manageable fund size and scope, and scale it up over time as success is demonstrated.

Ongoing Management and Oversight of the Fund
The GRF should be managed by a committee of stakeholders including the Manager of Facilities, Senior Sustainability Planner & Energy Coordinator, Corporate Asset Manager and others, which could be a subcommittee of the Corporate Energy Team. Their support will be crucial in the fund development and implementation.

It is recommended that the Town allocate permanent staff time to devote to fund management and conduct due diligence on proposed projects.

The fund charter outlines how it will operate for internal and external stakeholders. The procedure for reviewing, evaluating, and selecting projects needs to be clearly specified and should actively engage the relevant staff. When assessing potential projects, the criteria may include both hard requirements and preferred attributes, such as payback, capital cost, specific environmental benefits such as greenhouse gas emissions reduction, cost-effectiveness metrics (such as greenhouse gas reduction per dollar of capital cost) and potential for community engagement and collaboration.

GRF funding
Initially, the proposed GRF could be funded through seed capital, incentives and grants where 100% of all energy efficiency project incentive money received will go into the fund.

Once the GRF is running smoothly, consideration could be given for including energy savings from energy efficiency projects. This would require ongoing monitoring and verification of energy savings and buy-in from all stakeholders. Other potential sources of funding include:

- Renewable energy installations
- Future electric vehicle charging station revenue

15 APPENDIX H: FUNDING SOURCES – FEDERATION OF CANADIAN MUNICIPALITIES

	Description	Target	Amount	Deadline to apply
1	**Capital project: Signature initiative** https://fcm.ca/en/funding/gmf/capital-project-signature-initiative			
	Combined loans and grants funding to implement bold environmental projects that reduce GHG emissions and protect the air, water or land. The capital project may involve any type of initiative, so long as it has the capacity to create transformative change in the energy, transportation, waste, water or land use sector (or a combination of those sectors).	Signature initiatives do not have pre-set environmental targets/thresholds because the projects are unique and evaluated on a case-by-case basis. Preference in projects that have built-in mechanisms to encourage replication and widespread adoption (e.g., innovative business models, partnership models, new financing mechanisms).	• Regular loans and grants: A low-interest loan of up to $5 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. • High-ranking project loans and grants: These qualify for a low-interest loan of up to $10 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs.	Two-stage application process: Initial Review Form: August 1, 2019; Application by invitation only: October 1, 2019
2	**Capital project: Retrofit of municipal facilities** https://fcm.ca/en/funding/capital-project-retrofit-municipal-facilities			
	Funding for retrofits that improve energy efficiency by at least 30% in municipal facilities.	The combination of retrofits must reduce a building's energy use by at least 30%. A minimum of 20% must come from energy efficiency and a maximum of 10% can come from on-site, renewable energy. The 10% maximum does not apply to geothermal exchange systems. Retrofit changes must meet or exceed the national and provincial building codes (NECB 2011 or provincial derivatives).	• Regular loans and grants: A low-interest loan of up to $5 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. • High-ranking project loans and grants: These qualify for a low-interest loan of up to $10 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs.	Two-stage application process: Initial Review Form: August 1, 2019; Application by invitation only: October 1, 2019
3	**Capital project: Energy recovery or district energy** https://fcm.ca/en/funding/gmf/capital-project-energy-recovery-district-energy			
	Funding for capital projects that use recovered or renewable thermal energy in new or existing facilities. The capital project must reduce energy use and GHGs by at least 40% by using recovered or renewable thermal energy in new or existing facilities, emissions (GHGs) and improves their air quality.	The initiative must reduce fossil fuel or grid electricity use by at least 40% compared to current performance. It must be able to achieve this target within three years of implementation.	• Regular loans and grants: A low-interest loan of up to $5 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. • High-ranking project loans and grants: These qualify for a low-interest loan of up to $10 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs.	Two-stage application process: Initial Review Form: August 1, 2019; Application by invitation only: October 1, 2019

	Description	Target	Amount	Deadline to apply
4	**Capital project: New construction of energy-efficient facilities** https://fcm.ca/en/funding/gmf/capital-project-new-construction-energy-efficient-facilities			
	Funding for capital projects that target net zero energy performance in new municipal facilities. The capital project must include a combination of energy efficient measures that together, target net zero energy performance in a new municipal facility	The initiative must aim for **net zero** energy performance. That means any energy it requires must be generated through on-site, renewable or recovered power sources	• Regular loans and grants: A low-interest loan of up to $5 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. • High-ranking project loans and grants: These qualify for a low-interest loan of up to $10 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs.	Two-stage application process: Initial Review Form: August 1, 2019; Application by invitation only: October 1, 2019
5	**Study: Retrofit of municipal facilities** https://fcm.ca/en/funding/gmf/study-retrofit-municipal-facilities			
	Funding for feasibility studies of retrofits that improve energy efficiency by at least 30% in municipal facilities.	The combination of retrofits must have the potential to reduce a building's energy use by at least 30%. A minimum of 20% must come from energy efficiency and a maximum of 10% can come from on-site, renewable energy. The 10% maximum does not apply to geothermal exchange systems. Retrofit changes must meet or exceed the national and provincial building codes (NECB 2011 or provincial derivatives).	Grant: Up to 50% of eligible costs to a maximum of $175,000	Applications are accepted year-round, though this offer will close when all the funding has been allocated
6	**Study: Energy recovery or district energy** https://fcm.ca/en/funding/gmf/study-energy-recovery-district-energy			
	Funding for feasibility studies of projects that use recovered or renewable thermal energy in new or existing facilities. The study may compare several options or assess one option's ability to reduce energy use and GHGs by at least 40% by using recovered or renewable thermal energy in new or existing facilities.	The initiative must reduce fossil fuel or grid electricity use by at least 40% compared to current performance. It must be able to achieve this target within three years of implementation.	Grant: Up to 50% of eligible costs to a maximum of $175,000	Applications are accepted year-round, though this offer will close when all the funding has been allocated.
7	**Study: New construction of energy-efficient municipal facilities** https://fcm.ca/en/funding/gmf/study-new-construction-energy-efficient-municipal-facilities			
	Funding for feasibility studies of initiatives that target net zero energy performance in new municipal facilities.	The initiative must aim for net **zero energy** performance. That means any energy it requires should be generated through on-site, renewable or recovered power sources	Grant: Up to 50% of eligible costs to a maximum of $175,000	Applications are accepted year-round, though this offer will close when all the funding has been allocated.

	Description	Target	Amount	Deadline to apply
8	**Pilot project: Retrofit of municipal facilities** https://fcm.ca/en/funding/gmf/pilot-project-retrofit-municipal-facilities			
	Funding for pilot projects of retrofits that improve energy efficiency by at least 30% in municipal facilities. Pilot projects assess solutions in real-life conditions. They evaluate either a small-scale version of a project or a full-scale, replicable version.	The combination of retrofits must have the potential to reduce a building's energy use by at least 30%. A minimum of 20% must come from energy efficiency and a maximum of 10% can come from on-site, renewable energy. The 10% maximum does not apply to geothermal exchange systems. Retrofit changes must meet or exceed the national and provincial building codes (NECB 2011 or provincial derivatives)	Grant: Up to $350,000 to cover up to 50% of eligible costs	Applications are accepted year-round, though this offer will close when all the funding has been allocated
9	**Pilot project: Energy recovery or district energy** https://fcm.ca/en/funding/gmf/pilot-project-energy-recovery-district-energy			
	Funding for pilot projects that use recovered or renewable thermal energy in new or existing facilities. Pilot projects assess solutions in real-life conditions. They evaluate either a small-scale version of a project or a full-scale, replicable version. The pilot may compare several options or assess one option's ability to reduce energy use and GHGs by at least 40% by using recovered or renewable thermal energy in new or existing facilities.	The initiative must reduce fossil fuel or grid electricity use by at least 40% compared to current performance. It must be able to achieve this target within three years of implementation.	Grant: Up to $350,000 to cover up to 50% of eligible costs	Applications are accepted year-round, though this offer will close when all the funding has been allocated
10	**Pilot project: New construction of energy-efficient municipal facilities** https://fcm.ca/en/funding/gmf/pilot-project-new-construction-energy-efficient-municipal-facilities			
	Funding for pilot projects of initiatives that target net zero energy performance in new municipal facilities.	The initiative must aim for a **net zero** energy performance. That means any energy it requires should be generated through on-site, renewable or recovered power sources	Grant: Up to $350,000 to cover up to 50% of eligible costs	Applications are accepted year-round, though this offer will close when all the funding has been allocated.

References

Infinite Solutions Guidebook *Financing the energy renovation of public buildings through Internal Contracting* (http://www.energy-cities.eu/IMG/pdf/guidebook_intracting_web.pdf)

Energy Cities. Financing schemes increasing energy efficiency and renewable energy use in public and private buildings: Comparative Study. 2014. (http://www.energycities.eu/IMG/pdf/infinite_solutions_comparative_analysis_web.pdf)

Energy Sector Management Assistance Program. Financing Municipal Energy Efficiency Projects: Mayoral Guidance Note #2. (https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/FINAL_MGN1-Municipal%20Financing_KS18-14_web.pdf)

Establishing and Operationalizing an Energy Efficiency Revolving Fund (http://www.worldbank.org/content/dam/Worldbank/Event/ECA/revolving.pdf)

Green Revolving Funds: An Introductory Guide to Implementation and Management (https://files.eric.ed.gov/fulltext/ED539859.pdf)

Energy Revolving Funds for the following Ontario municipalities: City of Guelph, City of Hamilton, Town of Caledon, City of Waterloo, City of Burlington, City of Pickering

TOWN OF HALTON HILLS
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REPORT

REPORT TO:	Chair and Members of Planning, Public Works & Transportation Committee
REPORT FROM:	Romaine Scott, Legal Coordinator Planning & Sustainability Department
DATE:	September 10, 2019
REPORT NO.:	PLS-2019-0066
RE:	Deeming By-law Request Lots 35 and 36, Plan 32 – 18 Morris St, Halton Hills (Georgetown) File No. D26 GA

RECOMMENDATION:

THAT Report No. PLS-2019-0066 dated September 10, 2019 regarding a by-law to deem Lots 35 and 36, Plan 32 not to be within a registered plan of subdivision for the purposes of subsection 50(3) of the *Planning Act*, R.S.O., 1990, as amended, (subdivision control) be received;

AND FURTHER THAT staff be authorized to bring forward a by-law under subsection 50(4) to deem Lots 35 and 36, Plan 32, not to be within a registered plan of subdivision for the purposes of subsection 50(3) of the *Planning Act*, R.S.O., 1990, as amended;

AND FURTHER THAT the Clerk be directed to lodge a certified copy of such by-law in the office of the Minister of Municipal Affairs and Housing, pursuant to subsection 50(26) of the *Planning Act;*

AND FURTHER THAT the Clerk be directed to give notice of the passing of such by-law within thirty (30) days of the passing to each person appearing on the revised assessment roll to be the owner of the land to which the by-law applies, which notice shall be sent to the last known address of such person, pursuant to subsection 50(29) of the *Planning Act*.

BACKGROUND:

Lots 35 and 36 are whole lots on registered Plan 32 and comprise the property municipally known as 18 Morris Street, Georgetown. The current owner has made an application for a Minor Variance to allow the construction of a 97.5 m^2 accessory structure which dimensions exceed what is permitted under the current zoning by-law. The proposed accessory structure is to be constructed wholly on Lot 36 whereas the existing primary structure is located wholly on Lot 35. Zoning By-law 2010-0050

requires that an accessory structure be located on the same lot as the main or primary structure.

It is a condition of the Decision for Minor Variance, that the owner obtains a by-law under subsection 50(4) deeming Lots 35 and 36 not to be within a registered plan of subdivision for the purposes of subsection 50(3) of the *Planning Act*, R.S.O., 1990, as amended. The requested Deeming By-law will effectively merge the 2 lots into one parcel and the proposed accessory structure will be deemed to be on the same lot as the primary structure.

A location map for the property is attached as Appendix “1”.

COMMENTS:

Once the deeming by-law is registered on title to the lots, the 2 lots being in common ownership will be merged as one property and the owner will be able to construct the accessory structure in accordance with the zoning by-law.

RELATIONSHIP TO STRATEGIC PLAN:

This report has no relationship to the Town’s strategic plan.

FINANCIAL IMPACT:

There is no financial impact with respect to this Report.

CONSULTATION:

There has been consultation with the owner and with staff from both Planning and Zoning.

PUBLIC ENGAGEMENT:

There is no public engagement with respect to this Report.

SUSTAINABILITY IMPLICATIONS:

There is no sustainability implication with respect to this Report.

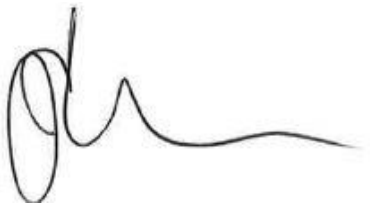
COMMUNICATIONS:

In accordance with subsection 50(29) of the *Planning Act*, the Clerk shall notify the owner of the property of the passing of the by-law, within thirty (30) days of the passing of such by-law. The Clerk will also provide a certified copy of the by-law to the Minister of Municipal Affairs and Housing pursuant to subsection 50(26) of the *Planning Act*.

CONCLUSION:

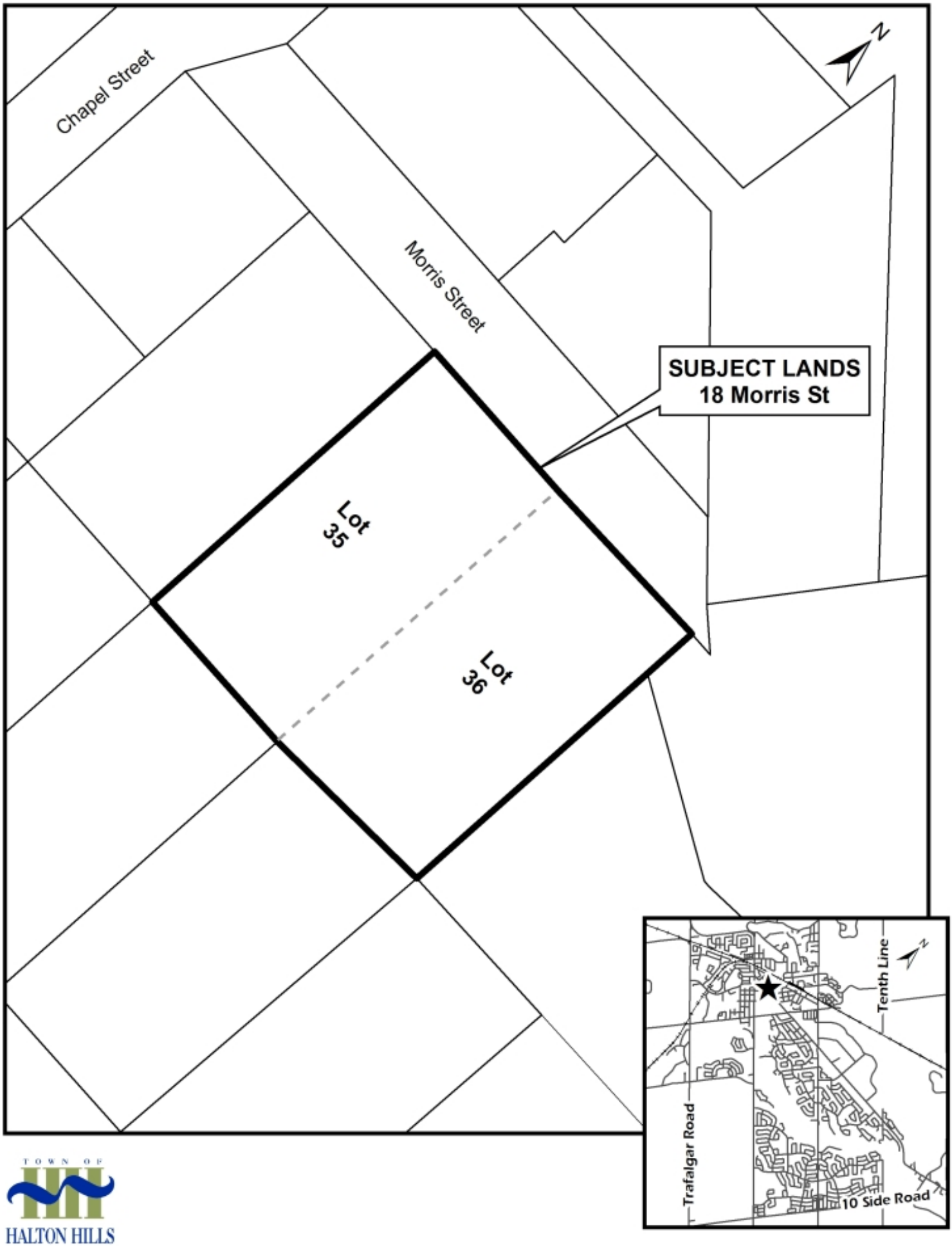
The owner is eager to proceed with the proposed development of the property and the Committee of Adjustment has issued a Decision that is conditional on the owner requesting the Deeming By-law, as set out in this Report. Staff therefore, recommends to Council that the necessary by-law be enacted to deem Lots 35 and 36, not to be within a registered plan of subdivision for the purposes of subsection 50(3) of the *Planning Act.*

Reviewed and Approved by,



John Linhardt, Commissioner of Planning and Sustainability

Brent Marshall, Chief Administrative Officer



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REPORT

REPORT TO: Chair and Members of the Planning, Public Works and Transportation Committee

REPORT FROM: Keith Hamilton, Planner - Policy

DATE: October 8, 2019

REPORT NO.: PLS-2019-0068

RE: Provincial Review of the Provincial Policy Statement– Halton Area Planning Partnership Joint Submission

RECOMMENDATION:

THAT Report PLS-2019-0068, dated September 16, 2019, regarding the Halton Area Planning Partnership (HAPP) Joint Submissions on the Provincial Review of the Provincial Policy Statement, be received;

AND FURTHER THAT Council endorse the comments on the Provincial Review contained in the Joint Submission attached as Schedule One to this report, to be submitted to the Province in advance of the commenting deadline of October 21, 2019;

AND FURTHER THAT a copy of this report be forwarded to the Ministry of Municipal Affairs and Housing, the Region of Halton, the Local Municipalities of Burlington, Milton and Oakville, Conservation Halton, Credit Valley Conservation and the Grand River Conservation Authority.

PURPOSE OF THE REPORT:

The purpose of this report is to:

- Provide an overview of the Province's Review of the Provincial Policy Statement (PPS) and proposed changes; and,
- Provide an overview of the Halton Area Planning Partnership's comments to the Ministry of Municipal Affairs and Housing (MMAH) on the PPS Review.

BACKGROUND:

1.0 Provincial Policy Statement Review

In May of 2019 the Province announced that a review of the Provincial Policy Statement (PPS) was forthcoming through the release of the "More Homes, More Choice: Ontario's Housing Supply Action Plan." At this time the stated focus of the review was to make policy changes that would encourage housing development and reduce barriers for developers, while recognizing the importance of local decision-making.

On July 22nd, 2019 the Province posted its proposed changes to the PPS on the Environmental Registry of Ontario website (https://ero.ontario.ca/notice/019-0279). The deadline for submitting comments on the proposal is set for October 21st, to provide a 91 day window for all those interested. The review has five (5) stated goals the proposed changes are expected to achieve:

- Increasing housing supply and mix;
- Protecting the environment and public safety;
- Reducing barriers and costs;
- Supporting rural, northern and indigenous communities; and,
- Supporting certainty and economic growth.

After the release of the proposed changes to the PPS, members of the Halton Area Planning Partnership (HAPP) began drafting a joint statement to be submitted to the Province prior to the October 21st deadline. This submission is discussed in greater detail in the Comments section.

2.0 Proposed Changes

Proposed changes to the PPS through this review came in the form of modified policy text, policies added, policies deleted, and policies moved into other sections. This section will summarize some of the key changes that Town staff flagged and commented on throughout the HAPP Joint Submission process.

2.1 Use of 'Market' Term Throughout

The Provincial review of the PPS is heavily influenced by a stated desire to encourage housing development. As a result use of the word market is prevalent in revised policies related to housing throughout. Specific examples include:

- Section 1.1.1 (market-based mix of residential types)
- Section 1.1.3.8 (market demand in settlement area expansion)
- Section 1.4.3 (market-based needs for housing)

The use of the term market is not completely new to the PPS. Regional Market Area is a term that was introduced in past versions of the PPS, and is currently defined as follows:

> *'refers to an area that has a high degree of social and economic interaction. The upper or single-tier municipality, or planning area, will normally serve as the regional market area. However, where a regional market area extends significantly beyond these boundaries, then the regional market area may be based on the larger market area. Where regional market areas are very large and sparsely populated, a smaller area, if defined in an official plan, may be utilized.'*

What is unclear is whether these new 'market' terms are related to this established definition, or whether market is now being considered something more localized and specific to individual settlement areas.

2.2 'Fast-tracking' of Priority Applications

Section 4.7 (as proposed) is a new policy requiring municipalities to increase housing through streamlining and fast-tracking priority applications. This policy lays out steps to achieve this by first identifying priority applications that represent housing and job-related development and then reducing the time needed to approve such applications.

The existing PPS identifies municipalities as responsible for providing opportunities for housing, setting density targets, and directing the development of new housing. This new policy introduces housing as a priority in the Implementation and Interpretation Section (Section 4) which directly relates to the first stated goal of increasing housing mix and supply.

2.3 Climate Change Policies

Proposed changes to the PPS include new and modified climate change policies rooted in the expanded use, and defining of the term 'Impacts of a Changing Climate':

> *'means the potential for present and future consequences and opportunities from changes in weather patterns at local and regional levels including extreme weather events and increased climate variability.'*

New and modified policies in Sections 1-3 of the PPS propose a shift from 'consider' to 'prepare for' impacts of a changing climate in planning and development. These proposed additions would result in a much greater presence of climate change within the PPS.

2.4 Expanded Permissions for Mineral Aggregate Extraction

Proposed changes to Section 2.5.2.2 would permit aggregate extraction in natural heritage features (outside the Greenbelt), excluding significant wetlands, provided a long-term rehabilitation plan can demonstrate no negative impact on such features and their ecological functions.

COMMENTS:

1.0 Summary of Key Points

The HAPP joint submission on proposed changes to the Provincial Policy Statement (PPS) is attached to this report as Schedule One. Key points made in this submission are organized into eight (8) categories:

- **Shifting from "shall" to "should" in some areas:** where shall has implied mandatory in existing policies, it is unclear whether should will have the same implication in policies where the substitution has occurred. This has occurred in a number of important policies, as noted in the HAPP joint submission.
- **References to "market" throughout:** there is concern that the revised PPS appears to elevate 'market' to a foundational component that is more important than other community objectives in justifying the merits of a proposal. As such, HAPP has recommended that the Province remove 'market' from the PPS. Further discussion on this is set out in Section 3.0.
- **Prioritizing development applications:** there is concern with the policy language included in Section 4.7, specifically that municipalities 'shall take action' in prioritizing housing applications. HAPP has recommended using 'should take action' as an alternative to allow municipalities more autonomy over what applications should be considered a priority.
- **Climate Change Adaptation and Mitigation policies:** the addition and modification of climate change policies is noted as a welcomed change from what currently exists in the PPS. HAPP has noted the definition of the term 'Impacts of a Changing Climate' does not reference causes and drivers of climate change. HAPP has recommended the Province expand this definition as well as include further policy changes that address climate change mitigation.
- **Changes to Indigenous Engagement:** in responding to new and modified policies on engagement with indigenous communities, HAPP have recommended the Province develop guidelines for what constitutes meaningful engagement with such communities.
- **Changes to Implementation/Interpretation Section:** there is concern with the proposed relocation of Section 4.9 to the Preamble. This section establishes PPS policies as minimum standards for planning decisions. HAPP has recommended this policy remain in the Implementation and Interpretation Section (4) so as not to minimalize its importance.
- **Implementation guidelines:** there is concern with the multiple instances in the proposed modified or added policies where references are made to yet-to-be

developed guidelines, or guidelines yet-to-be approved. HAPP has noted the difficulty in commenting on policies which reference such guidelines.

- **Changes to mineral aggregate extraction policies:** concerns have been noted with respect to Section 2.5.2.2 where changes would allow extraction to be considered in areas with key natural features, provided a rehabilitation plan can demonstrate 'no negative impact'. The submission has questioned whether rehabilitation of extraction areas can truly result in 'no negative impact' and has recommended that these proposed policies be removed.

2.0 Response to Consultation Questions

In addition to providing general comments on proposed policy changes to the PPS, the Province asked commenters for responses to five (5) questions related to stated goals and proposed changes. As part of the joint submission, HAPP has provided a response to each question. Key points from the responses are noted below, while full responses can be found as part Schedule 1.

Question 1: Do the proposed policies effectively support goals related to increasing housing supply, creating and maintaining jobs, and red tape reduction while continuing to protect the environment, farmland, and public health and safety?

In response, HAPP has acknowledged the potential for the changes to benefit housing supply while noting concerns resulting from other proposed changes. These concerns are largely those which have been outlined in the previous section (Summary of Key Points).

Question 2: Do the proposed policies strike the right balance? Why or why not? How do the responses answer the questions about balance?

In response, HAPP has acknowledged the proposed policy changes strike a balance between housing and protecting the environment. However, HAPP's response does note imbalance in other areas. These include the relocation of several policies from the Implementation and Interpretation section to the Preamble and a lack of mitigation strategy for policies referencing the impacts of climate change.

Question 3: How do these policies take into consideration the views of Ontario communities?

In response, HAPP has made reference to changes to Section 2.5.2.2 (considering aggregate extraction in areas with natural features) and climate change policies. The response calls for the removal of added language to 2.5.2.2 and notes that with the expanded climate change policies there is more opportunity to add mitigation policies in the PPS. The response also highlights the unity among the area municipalities for a call for stronger mitigation policies through the climate change emergency declarations that have come over the past six months.

Question 4: Are there any other policy changes that are needed to support key priorities for housing, job creation, and streamlining of development approvals?

In response, HAPP has requested the Province put more emphasis on affordable and sustainable housing in future policy considerations.

Question 5: Are there other tools that are needed to help implement the proposed policies?

In response, HAPP has suggested the Province review and update guidelines related to policies in the PPS, including flood control and natural heritage. The response also suggests they provide clear definitions for multiple terms outlined in the full response provided in Schedule 1.

3.0 Market References in the PPS

As outlined in the Background Section of this report, the term market has been introduced into the PPS. In the absence of a definition, the use of the term market has created uncertainty as to how it would be applied when formulating planning policy or evaluating the merits of a development application. It should be noted that references to market were also included in A Place to Grow, the revised Growth Plan for the Greater Golden Horseshoe.

Staff recognizes that market considerations are an input into the planning process. The proposed PPS wording, however, appears to elevate market to a foundational component as it relates to planning policy and development decisions, particularly as it pertains to housing. To that end, it was recommended in the HAPP joint submission that the market tests be removed and replaced with references to an “appropriate range and mix of housing options and densities”. As defined, housing options captures the entire housing continuum. In the alternative, if market references are to remain in the PPS, it is recommended that the policies be structured to make it clear that market based factors are one of many that need to be considering in arriving at good planning decisions.

4.0 Aggregate Extraction in Natural Heritage Features

As outlined in the Background Section of this report, aggregate extraction is now proposed to be permitted in natural heritage features (outside the Greenbelt), excluding significant wetlands. This policy (in Section 2.5.2.2) would lean on the ability for a ‘long-term rehabilitation plan’ to demonstrate no lasting negative impacts would result post-extraction.

The Joint Statement (Key Point 8) expresses concern that the proposed policy (as worded) would only require rehabilitation plans demonstrate no negative impact during the post-extraction rehabilitation phase, without regard for the environmental impacts that would occur during extraction, which can be a decades-long undertaking.

In addition to noted issues with permitting extraction in key natural heritage features, the Joint Statement also expresses concern with standing PPS policies (Section 2.5.2.1) that do not require proponents of extraction to demonstrate need for aggregates to be extracted. In addition to recommending the new policies enabling extraction in natural heritage features be removed, HAPP have also recommended Section 2.5.2.1 be changed to require proponents to demonstrate the need for additional supplies of aggregate resources.

5.0 Next Steps

It is recommended that staff be directed to report back to Council with further detailed information on any potential implications for the Town's land use planning policies and processes, which will take place when additional clarification and information is released by the Province.

RELATIONSHIP TO STRATEGIC PLAN:

This report relates directly to the implementation of the entire Town Strategic Plan, but in particular Strategic Direction I: Provide Responsive, Effective Municipal Government, the Goal to provide strong leadership in the effective and efficient delivery of municipal services, and the following Strategic Objectives:

I.6 To participate fully in Region-wide initiatives to protect and promote the Town's objectives.

I.7 To foster a greater understanding of the Town's roles and responsibilities and relationships with other orders of government.

FINANCIAL IMPACT:

There is no financial impact associated with this report.

CONSULTATION:

The Halton Area Planning Partnership consisting of the Region of Halton, the four Local Municipalities, Credit Valley Conservation, Conservation Halton, and Grand River Conservation Authority participated in the preparation of the Joint Submission that is the subject of this report.

PUBLIC ENGAGEMENT:

No public engagement was undertaken for this report.

SUSTAINABILITY IMPLICATIONS:

The Town is committed to implementing our Community Sustainability Strategy, Imagine Halton Hills. Doing so will lead to a higher quality of life. The relationship between this report and the Strategy is summarized below:

The recommendations outlined in this report are linked to the Economic, Environmental and Social Pillars of Sustainability. In summary, the alignment of this report with the Community Sustainability Strategy is good.

COMMUNICATIONS:

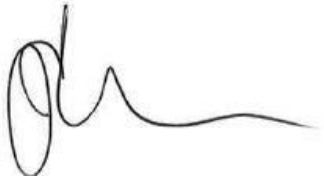
A copy of this report will be forwarded to the Ministry of Municipal Affairs and Housing, the Region of Halton, the Local Municipalities of Burlington, Milton and Oakville, Conservation Halton, Credit Valley Conservation and the Grand River Conservation Authority.

CONCLUSION:

This report has provided an overview of the contents of the Halton Area Planning Partnership Joint Submission on the Provincial review of, and proposed changes to the Provincial Policy Statement. It is recommended that Council endorse the comments contained in the Joint Submission in order to complete the Town's involvement in the Review of the Provincial Policy Statement.

Reviewed and Approved by,

Bronwyn Parker, Manager of Planning Policy



John Linhardt, Commissioner of Planning and Sustainability

Brent Marshall, Chief Administrative Officer

Halton Area Planning Partnership (HAPP)

Joint Submission on the Proposed Changes To The Provincial Policy Statement

October 2019

Introduction

The Halton Area Planning Partnership (HAPP) is comprised of Halton Region, City of Burlington, Town of Halton Hills, Town of Milton, Town of Oakville, Credit Valley Conservation, Grand River Conservation Authority and Conservation Halton.

This submission represents HAPP's collective review and joint response to the proposed changes to the Provincial Policy Statement (PPS) in support of the release of the "More Homes, More Choice: Ontario's Housing Supply Action Plan" in May. The proposed changes were placed on the Environmental Registry of Ontario as a Policy Proposal Notice (ER Number: 019-0279) on July 22, 2019 with a 91-day comment period ending October 21, 2019. According to the notice, the proposal was prepared by the Ontario Ministry of the Municipal Affairs and Housing to help increase the supply of housing, support jobs and reduce barriers and costs in the land use planning system.

HAPP welcomes this opportunity to have its collective voice heard by responding to the proposed changes to the PPS. HAPP's response includes:

1. This letter, which contains comments and recommendations related to main areas of proposed change within the PPS that are relevant to and important for Halton.
2. Appendix 1, which contains in table form responses to provincial questions and comments addressing specific changes to sections and policies within the PPS.

Background

The Provincial Policy Statement (PPS) is a consolidated statement of the government's policies on land use planning. It was issued under section 3 of the *Planning Act* and came into force and effect on April 30, 2014.

On May 2, 2019, the government released "More Homes, More Choice: Ontario's Housing Supply Action Plan". The Action Plan included a series of initiatives to address housing supply, including a review of the PPS.

On July 22, 2019 the government released changes to the PPS through the Environmental Registry of Ontario as a Policy Proposal Notice (ER Number: 019-0279). The proposed changes to the PPS are meant to support the government's following objectives:

- Encourage the development of an increased mix and supply of housing.
- Protect the environment and public safety.
- Reduce barriers and costs for development and provide greater predictability.
- Support rural, northern and Indigenous communities.
- Support the economy and job creation.

In addition to proposed modifications to the PPS, the government is seeking feedback through responses to the following questions:

- Do the proposed policies effectively support goals related to increasing housing supply, creating and maintaining jobs, and red tape reduction while continuing to protect the environment, farmland, and public health and safety?
- Do the proposed policies strike the right balance? Why or why not?

- How do these policies take into consideration the views of Ontario communities?
- Are there any other policy changes that are needed to support key priorities for housing, job creation, and streamlining of development approvals?
- Are there any other tools that are needed to help implement the proposed policies?

Key Points of HAPP's Response

1. Softening of Important Policy Standards from "Shall" to "Should"

The proposed PPS has softened municipal decision making standards from a mandatory "shall" to a less directive "should" for a number of important policies, including: settlement area policies concerning the form, mix, and type of new development that makes most efficient use of land, infrastructure and public facilities (section 1.1.3.6); requirements to establish and implement phasing to achieve orderly growth and development (section 1.1.3.7); and requirements for efficient use of existing and planned transportation infrastructure (section 1.6.7.2). These changes will likely compromise a municipality's ability to uphold and enforce good planning decisions, especially in the absence of a clear provincial definition of how the "should" standard is to be interpreted and implemented. As a result, It is recommended that the updated PPS be modified to maintain the PPS 2014 "shall" directives for these policies.

2. Introduction of "Market" Considerations

With the introduction of the "market" tests in PPS polices such as the requirement for a settlement boundary expansion (section 1.1.3.8), there is concern that the PPS appears to elevate "market" to a foundational component that is more important than other community objectives in justifying the merits of a proposal, particularly as it relates to housing. This is not consistent with implementing a broad range of matters defined by *the Planning Act* as representing the Provincial interest.

Therefore, it is recommended that the Province remove references to "market" as a basis for determining the merits of a policy or development proposal and replace them with references to an appropriate range and mix of housing options and densities.

3. Proposed Changes to Prioritize Development Applications

Proposed changes to section 4.7 of the PPS mandate that municipalities "shall take action to support "streamlining", "fast-tracking" and "prioritizing" applications to facilitate increased housing and job-related growth and development, but does not provide a clear definition of what constitutes a priority application such as "affordable housing" or how it can be determined. Given that recent changes to the *Planning Act* under Bill 108, have already mandated that municipalities significantly fast track municipal planning decisions, introducing a new implementation policy in the PPS that further mandates faster decision-making appears does not provide municipalities discretion to prioritize and balance a range of policy interests in application review, including impacts on housing supply and job growth.

It is recommended the proposed policy be modified from a directive "shall take action" to a more flexible "should take action" to provide planning authorities with some discretion

to make determinations what planning applications should be prioritized for fast tracking, while balancing a range of policy interests.

4. Considerations for Climate Change Adaptation and Mitigation Policies

There appears to be numerous welcomed policy changes throughout the proposed PPS that require municipalities and planning authorities to “prepare for the impacts of a changing climate” when making decisions on planning matters. The new climate change definition in the proposed PPS only speaks to the “impacts of a changing climate” and does not address the broader causes and drivers of climate change. it is recommended that the Province expand this definition to acknowledge the need to both “prepare for” and “mitigate” against climate change. This is particularly important given that many municipalities and agencies within Halton have recently declared “climate emergencies” to respond to the growing public concern over climate change impacts and calls to identify it as a priority issue.

Furthermore, with the addition of language around responding to the impact of climate change there is a great opportunity as well to improve existing policies to address climate change mitigation and reduce greenhouse gases through the use of green infrastructure, sustainable housing, and renewable energy systems. These additional changes could assist the Province in lowering its emissions, preserving air quality, and meeting targets and objectives outlined in the “Preserving and Protecting our Environment for Future Generations, A made-in-Ontario Environment Plan”.

5. Changes to Indigenous Engagement

The updated PPS emphasizes the importance and value of the unique role Indigenous communities play in land use planning and development. Halton’s planning partners acknowledge the need for engagement with Indigenous communities on land use matters as well as when conserving cultural heritage. There is, however, a need for the Province to provide additional guidance to support implementation of these policies so municipalities have clearer direction on what will be expected through consultation and what applications will require consultation with Indigenous communities. The Province needs to develop consultation guidelines so that there is a mutual understanding of what constitutes meaningful engagement.

6. Changes to the Implementation and Interpretation Section

Significant changes are proposed to the “Implementation and Interpretation” section of the proposed PPS, most notably the removal of section 4.9 PPS, 2014 minimum standards policy statement that enables municipalities to go beyond the PPS policies when making decisions on planning matters. This policy has been a longstanding statement in the “Implementation and Interpretation” section of the PPS since the establishment of the PPS, 2005. While this statement has been relocated to the Preamble of the proposed PPS, HAPP is concerned that relocating the minimum standards and other PPS 2014 implementation policies de-emphasizes their importance as expressed directional policies that municipalities can reference when making planning decisions. it is recommended that the Province maintain the minimum standards and other directional policies in the "Implementation and Interpretation” section instead of removing them or relocating them to the Preamble of the PPS.

7. **Implementation Guidelines**

There are numerous policy changes in the proposed PPS where references are made to unknown, draft, or non-existent guidelines that are intended to help implement the policies (such as section 1.1.3.8.e) which appear to relate to the draft Provincial Agricultural Impact Assessment Guidelines released for public comments in March 2018 but not finalized, or section 2.1.10 references to wetland management guidelines that are non-existent). These policies are essentially incomplete if the guidelines that help implement them are not clearly identified in PPS and not finalized for public use. Furthermore, it is difficult for HAPP to provide an accurate evaluation of the impact of proposed policies that reference guidelines when these guidelines are not clearly identified and not yet in place.

PPS policies should largely be developed with sufficient detail to help municipalities and planning authorities achieve planning outcomes without having to rely on supplemental guidance. If certain guidelines are essential to implement PPS policies (such as guidelines that are identified in Attachment 1), it is important that the Province clearly identify these guidelines and consult extensively with municipalities to ensure that they have utility and can be implemented through planning decisions.

8. **Changes to Permit Mineral Aggregate Extraction in Natural Heritage Features**

The proposed change to section 2.5.2.2 in the PPS is concerning to HAPP as it introduces consideration for extraction in natural heritage features (outside the Greenbelt) provided that the long-term rehabilitation can demonstrate no-negative impacts on the natural feature and its ecological function. Most aggregate extraction, although considered an interim use, may be in operation for decades. The proposed policy change permits mineral aggregate extraction in natural heritage features such as provincially significant woodlands, fish habitat, and habit of endangered and threatened species provided that the long-term rehabilitation can demonstrate no negative impacts on the natural features or their ecological functions. This would appear to allow extraction within some of the most significant and sensitive natural heritage features without having to demonstrate “no negative impact” to these features until rehabilitation has commenced. Also, the proposed policy has no regard for hydrological features and functions that play an important role in these sensitive habitats nor for the connectivity between habitats and features. Rehabilitation, for most “below the water table” quarry operations, never returns the affected site to a similar state of features and functionality as they are most likely to become aquatic habitats as opposed to terrestrial habitats, especially in Halton Region. Claiming that an aquatic habitat will replace the previous terrestrial habitat in functionality and connectivity, most likely will not meet the “no negative impact” test. HAPP therefore does not support the addition of this policy and strongly suggests it be removed

Conclusion

There is support for the Province’s introduction of a number of changes to the PPS that strengthen policies related to climate change and indigenous engagement, and suggests a number of enhancements to these important policies to ensure that they can be effectively implemented. Some proposed policy changes can be improved through modification, such as maintaining directive policy statements in the “Implementation and Interpretation” section or by strengthening/softening directive language “shall vs. should” as appropriate and where indicated

in Appendix 1. In addition, there are a number of policy changes that the Province has introduced in the PPS such as changes to mineral aggregate policies that permit extraction in natural heritage features, which would have significant impacts to Halton's planning partners. These are not supported and should be removed from the PPS given their impacts to Halton.

Thank you for providing the Region, its Local Municipalities, and Conservation Authorities the opportunity to comment on the proposed changes to PPS. It is recommended that the Province update the PPS to reflect our collective comments. We welcome the opportunity to have further discussions with Provincial staff to clarify our comments prior to the release of the final amendments to the PPS.

Respectfully submitted,

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Director of Planning Services &
Chief Planning Official
Halton Region

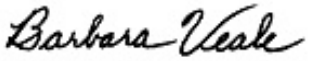
Heather MacDonald, MCIP, RPP
Director and Chief Planner
Department of City Building
City of Burlington

John Linhardt, MCIP, RPP
Commissioner of Planning & Sustainability
Town of Halton Hills

Barb Koopmans, MCIP, RPP
Commissioner of Planning & Development
Town of Milton

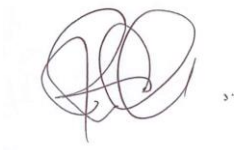
Mark H. Simeoni, MCIP, RPP
Director of Planning Services
Town of Oakville

Barb Veale, PhD, MCIP, RPP
Director, Planning and Watershed Management
Conservation Halton



Nancy Davy
Director of Resource Management
Grand River Conservation Authority

Josh Campbell, RPP
Director of Planning and Development Services
Credit Valley Conservation



Proposed Changed to the *Provincial Policy Statement* APPENDIX 1

Table 1: Responses to consultation questions that have been posed by the Province:

Consultation Questions	Proposed Final Comments
1. Do the proposed policies effectively support goals related to increasing housing supply, creating and maintaining jobs, and red tape reduction while continuing to protect the environment, farmland, and public health and safety?	The proposed modifications may support the goals related to increasing housing supply, creating and maintaining jobs, and red tape reduction, however, HAPP has concerns with the following proposed policy changes: - Allowing mineral aggregate operations outside of the Greenbelt area to use rehabilitation plans to demonstrate that extraction will have no negative impacts which may result in permanent damage to significant natural features and their functions (Clause 2.5.2.2.). - Requiring the fast-tracking of development applications without giving municipalities the discretion to make such decisions. (Clause 4.7 a)). - Removing specific actions in land use planning that were meant to improve accessibility for persons with disabilities and older persons as prescribed by the Accessibility for Ontarians with Disabilities Act. - Removing requirements to coordinate with lower tier municipalities populations, housing and employment projections - Not providing a clear definition of “Market-based”. - Only including climate change adaptation definition and recommendations and missing many opportunities to include encourage climate change mitigation. - Changes to the Implementation and Interpretation section affecting policies such as 4.9 (PPS as a minimum standard).
2. Do the proposed policies strike the right balance? Why or why not? How do the responses answer the questions about balance?	The proposed changes to the PPS strive to strike the right balance between providing sufficient housing options and protecting the environment and public safety, however it does not achieve this balance in many policy areas including: - Providing a strong planning foundation through clear and direct implementation policies, which has been somewhat weakened by proposed relocation of policies 4.9, 4.11, 4.12 and 4.13 from the “Implementation and Interpretation” section to the Preamble or Part II (How to Read the PPS), which address :

	• Minimum standards and the statement that planning authorities and decision makers are permitted to go beyond the minimum standards established in the PPS (Clause 4.9 -moved to Part III). • Infrastructure projects requiring approval under other legislation and regulations including the Environmental Assessment Act (Clause 4.11 – moved to Part I). • Provincial plans such as the Greenbelt Act taking precedence over the PPS (Clause 4.12 – moved to Part III). and • Agreements within the Great Lakes – St. Lawrence being considered (Clause 4.13 moved to Part I). - Addressing the urgency of climate change and its impacts on the Province, which the PPS partially addresses through the addition of climate change adaptation language. However, the PPS should also be changed to place more emphasis on climate change mitigation through green and low impact development as well as encouraging renewable energy systems. - There are instances where “shall” has been changed to a “should” making the policy more permissive (s.1.1.3.6, s.1.1.3.7 and s.1.6.7.2). Such change, especially in the context of the Greater Golden Horseshoe region, may impede municipalities’ work to manage growth and development in a way that protects important natural and agricultural resources
3. How do these policies take into consideration the views of Ontario communities?	There is a concern with proposed changes to policy 2.5.2.2, which allows mineral aggregate extraction to be considered in natural heritage features outside of the Greenbelt area, provided that the long-term rehabilitation plan can demonstrate no negative impacts on the natural features and their ecological functions. It is our position that although aggregate extraction is considered an interim use, significant and sensitive natural heritage features and designated vulnerable areas, vulnerable surface water, vulnerable groundwater features and their hydrologic function are irreplaceable and the short to medium impacts on the environment should be considered when assessing an aggregate extraction proposal. HAPP recommends that proposed changes to policy 2.5.2.2 be removed. HAPP welcomes the addition of proposed PPS policies that acknowledge the need to prepare for and adapt to climate change. However, we note that with the welcomed addition of language about preparing for the impact of climate change there is a great opportunity as well

	to add/or improve policies to address climate change mitigation to reduce greenhouse gas levels through the use of green infrastructure, sustainable housing and renewable energy systems. These additional policy changes are necessary for the Province to lower its emissions, preserve air quality, and meet its targets and objectives as outlined in the "Preserving and Protecting our Environment for Future Generations, A made-in-Ontario Environment Plan". These policy changes will also reflect and respond to the growing public concern over climate change impacts and the need to identify it as a priority issue (as highlighted in Halton through the multiple climate change declarations: Burlington – April 23; Halton Hills – May 6; Oakville – June 24; and Milton – July 22).
4. Are there any other policy changes that are needed to support key priorities for housing, job creation, and streamlining of development approvals?	Halton's planning partners suggest putting more emphasis on prioritizing affordable and sustainable housing as important policy considerations in addressing the housing shortage and affordability crisis in the Region.
5. Are there other tools that are needed to help implement the proposed policies?	Additional tools are required including: - updated guidelines related to protecting public health and safety from natural hazards – in particular, updated technical guidelines related to flood and erosion hazards are needed. - define terminology and clarify guidance to help implement many updated policies, including: • 1.1.1.b, 1.1.3.8, 1.3.1.c, 1.4.3 and 1.7.1.b - need for definition and clarity for undefined proposed market-related references; • 1.1.2 - need for provincial guidelines as proposed to help asses land needs; • 1.1.3.8.e - need for clarity about provincial guidelines referenced as part of the agricultural impact test for comprehensive review settlement area expansion; • 1.2.2 - need for Province to provide consistent guidelines for municipal consultation with Indigenous communities; • 1.2.4.a – need for Provincial guidelines as proposed in reference to population, housing and employment projection allocation; • 1.2.6.1 – need for Province to update provincial land use compatibility guidelines with respect to planning and development of major facilities and sensitive land uses;

	• 2.3.2 – Clarify what is meant by “provincial standards” for designating prime agricultural areas and specialty crop areas; • 2.3.3.1 – Clarify in policy that Provincial criteria with respect to agriculture-related and on-farm diversified uses are provided in Province’s Guidelines on Permitted Uses in Ontario’s Prime Agricultural Areas; • 2.3.6.2 – Clarify MDS guidelines address impacts from new or expanding non-agricultural uses; and • 4.9 – Clarify what specific guidelines are proposed to monitor Official plan implementation. - There also numerous pre-existing guidelines that need to be updated such as: The Natural Heritage Reference Manual and Natural hazard-related technical guidelines (specifically geared to the PPS which are complementary and supportive of CA regulations). - Definitions of “Adjacent lands”, “Freight supportive”, “Major goods movement facilities and corridors”, “MDS formulae”, “major corridors”, “prime agricultural areas”, “Protected heritage property”, “Specialty crop area”, ‘transit supportive”, A clear definition and potential criteria and guidance for terms such as “market-based needs”, “mix of residential types.” In addition, to support and supplement the PPS, Halton recommends that the Province provides the following tools: - A guideline to assist municipalities in addressing climate change through land use planning instruments such as official plans and planning tools. - More incentives for small businesses and the residential markets are needed to encourage those sectors to increase their energy conservation/efficiency and convert to low carbon technologies (EVs, etc.). - Changes to the Ontario Building Code relating to requirements for accessible housing as it relates to low rise/single detached/townhouse forms of development.

TOWN OF HALTON HILLS
Working Together Working for You!

MEMORANDUM

TO: Chair and Members of the Planning, Public Works and Transportation Committee

FROM: Deanna Locey, Transit Supervisor

DATE: September 19, 2019

MEMORANDUM NO.: MEM-TPW-2019-0019

RE: Investing in Canada Infrastructure Program for Public Transit Stream Update

PURPOSE OF THE MEMORANDUM:

The purpose of this Memorandum is to inform Council that the Town will be applying for funding through the Investing in Canada Infrastructure Program (ICIP) Public Transit Stream and to provide a summary of the Town's proposed eligible projects.

BACKGROUND:

On July 22, 2019 the Provincial Government announced the second intake of funding through the ICIP Public Transit Stream. Halton Hills is currently eligible to apply for available funding up to a maximum of $473,114.00 from the Provincial Government and $567,793.00 from the Federal Government. Funding must be applied to projects directly related to transit between 2019 and 2028. The calculation for allocated funding is based on Provincial Gas Tax subsidies that have been reported with ridership data to the Canadian Urban Transit Association in 2015.

COMMENTS:

To be eligible, projects must meet at least one of the following outcomes: improved capacity of public transit infrastructure; improved quality and/or safety of existing or future transit systems; and/or improved access to a public transit system.

Funding can be directed to new construction, rehabilitation or replacement of eligible transit infrastructure projects. This infrastructure includes rolling stock assets, fixed assets, transit exclusive infrastructure, and active transportation directly connected to the public transit system.

The maximum cost share percentage for funding is 40% from the Federal Government, 33.33% from the Provincial Government, and 26.67% from the Municipality, of total eligible costs.

Staff are proposing that the available funding be applied to the following projects:

- $100,000 for transit infrastructure of shelters and stops along the Steeles Avenue corridor within the Municipal boundaries of Halton Hills;
- $930,000 for rolling stock which includes five (5) replacement vehicles in accordance with the Town's fleet asset management plan and one (1) additional vehicle for fleet expansion of transit services; and
- $370,000 for transit hardware and software technology requirements for the expansion of transit and the support of specialized transit services.

The proposed projects for funding are consistent with the Town's Transit Service Strategy as per Report No. TPW-2019-0026 and as indicated in the draft 2020 Capital Budget Forecast.

CONCLUSION:

The application for funding must be submitted by October 24, 2019. Staff is currently finalizing our submission.

All projects will be approved by the Province prior to being nominated to the Federal Government for final approval. Provincial assessment will be conducted using an outcomes-based approach and will consider:

1. Technical merit
2. Alignment with provincial transit priorities, provincial growth, and land-use policies
3. Financial review

Once Provincial and Federal approval are complete, the Ministry of Transportation will notify each applicant of the result of the review. At that time, staff will compose a report to Council to enter into a Transfer Payment Agreement with the Ministry of Transportation.

Reviewed and approved by,

Maureen Van Ravens, Manager of Transportation

Chris Mills, Commissioner of Transportation and Public Works

Brent Marshall, Chief Administrative Officer