

Town of Halton Hills Corporate Energy Plan Update

Terms of Reference

PROJECT OR PROGRAM REQUIREMENTS

1 Municipal Situation/Overview

1.1 Background

The Town of Halton Hills has built a strong reputation as a leader in energy planning and emissions management. Through the development of high efficiency new buildings, embedding of an energy conservation ethos among staff and facility managers, and the development of renewable and alternative energy projects corporate energy management has brought numerous quality of life benefits to employees and residents, and has reduced the overall energy costs associated with Town operations. The 2014 Corporate Energy Plan was a vital component of building the Town's reputation as an energy leader.

The 2014 plan was developed after the passage of the *2009 Green Energy and Green Economy Act*. In that Act, the Government of Ontario expressed a commitment to reducing the environmental footprint of public sector buildings. Regulation 397/11 – developed under the Act – required that Ontario municipalities produce energy conservation and demand management plans every five years starting in 2014. The Town's current Corporate Energy Plan – which covers the period from July 2014 to July 2019 – was developed to fulfill this mandate and focuses on reducing greenhouse gases emitted by the Town's operations. Although the *Green Energy Act* has since been repealed, these reporting requirements have been maintained under the *Electricity Act* O.Reg 507/18

The Corporate Energy Plan's 85 actions focus on:

1. Lowering the Town's natural gas, electricity and vehicle fuel consumption
2. Increasing the use of low carbon technologies
3. Supporting the use of renewable energy.

In November of 2017, Town Council adopted new emissions reduction targets which aim for an 80% reduction in emissions by 2050. Achieving this target will require a new plan that can build on the successes of the Town's existing energy management program, while significantly deepening the energy and emissions savings associated

with new recommended actions. The 2014 Corporate Energy Plan is scheduled to be updated in 2019. The development of an updated Corporate Energy Plan provides an opportunity to deepen and extend the Town's existing commitment to excellence in Corporate Energy Management and to continue to build on the groundwork that has been developed over the last four years.

1.2 Building on a Commitment to Energy Conservation

The 2014 Corporate Energy Plan set out 85 actions focused on energy consumption at Town facilities. Of these 85 actions, 70 have either been implemented or are underway. Measures undertaken as a result of the plan include:

- the establishment of the corporate energy management team,
- hiring a Senior Sustainability Planner and Energy Coordinator,
- the development of an Energy Management Information System that tracks energy consumption in all town facilities and provides important analytical capacity to support energy planning in the Town, as well as
- a variety of technical measures aimed at increasing the efficiency of Town facilities.

As a result of these efforts, energy intensity per unit of floor space has decreased by nearly 20% since 2011, exceeding the plan's energy target.

During this period, however, Town operations have expanded significantly. In 2016, the Town of Halton Hills had a population of 61,161 – a 3.6% increase over 2011 levels. Meeting the needs of that growing population has meant that significant new floor space has been built and Town operations have continued to expand. Since 2011, the total floor space of town facilities increased 47% from 341,907 ft² to 502,266 ft². While the Town has been able to implement efficiency measures in order to offset the energy impact of this growth, total energy consumption, greenhouse gas emissions, and energy costs have continued to increase.

The Town now has the ability to build on the success of the 2014 plan and to reflect the current state of energy management and climate change action in Halton Hills and Ontario more broadly. While that plan was successful in building a strong organizational framework to support action on energy and emissions in the Town's operations, we now have an opportunity to build upon that framework by integrating new energy management processes that reflect the evolution of the field in North America.

Among its strengths, the 2014 plan placed emphasis on organizational changes which were intended to build an institutional structure and culture of energy management at the Town. The creation of a dedicated Energy Coordinator position, the development of a Corporate Energy Management Team, the implementation of an Energy Management Information System to track energy performance in buildings, strong reporting frameworks, and progress on fleet management mean that energy considerations are now embedded throughout the Town's operations. Through the update to the 2014 plan the Town should seek strategies that can deepen and extend this framework.

At the same time, the components of the 2014 plan that have been the most challenging to implement have been the specific technical measures recommended for Town facilities. During the implementation phase a number of the measures identified in the plan were determined either to be inapplicable to Town facilities, no longer aligned with best available technologies, or no longer in accordance with the operational priorities of the Town. As a result, while the Town has implemented a number of efficiency measures in Town facilities since 2014, in many cases these have been driven by immediate equipment maintenance needs and emerging opportunities identified by Town staff, rather than the specific measures and timelines outlined in the 2014 plan. The updated plan should build on this experience by identifying ways to integrate efficiency strategies within the decision making processes of relevant departments and to establish a broader framework for identifying and prioritizing efficiency measures to be implemented.

The Updated Corporate Energy Plan will, therefore, be less concerned with listing out sets of technical measures to be implemented over the plan period. Instead, it will focus primarily on the key strategic and organizational interventions that can create decision making, policy, and funding mechanisms that will support action on energy and emission reductions at the Town.

Such an approach should also extend to the development of renewable energy projects. While the 2014 plan recommended that the Town ‘develop a process for identifying, evaluating, and developing renewable energy projects – action # 84’, it was not clear what such a strategy might look like and how the Town would participate in the renewable energy sector given the fact that the Town-owned Local Distribution Company – Halton Hills Hydro – has been heavily involved in this area for a number of years. The updated plan will make the development of this area a priority.

Similar issues will emerge as the Town develops and begins to implement a low-carbon mobility strategy. In addition to identifying individual vehicles that might be candidates to shift towards low-carbon fuel technologies, the plan should establish the decision making and evaluation frameworks that will be used to support fleet managers in shifting the whole fleet towards low-carbon technologies and fuel efficient practices over the life of the plan and beyond. The Town is in the early stages of work on this aspect of fleet management and, as a result, we have an opportunity to learn from the experience with implementing the 2014 plan in facilities in order to make this process as strong as possible.

All of this must rest on a foundation of strong financial analysis. The 2014 plan set out estimated costs and savings associated with recommended measures, as well as an outline of potential funding through utility based incentives. It will be necessary to expand on this approach in the plan update.

Although the Town was initially successful in securing incentive-based financing to reduce the cost of certain early projects, a number of those incentive programs were either altered or eliminated during the plan’s implementation which impacted available resources for projects that were planned for the latter part of the implementation period. Furthermore, many of the actions that were included in the 2014 plan were either

relatively inexpensive ‘low-hanging fruit’ or organizational and policy changes that set the stage for more impactful actions through future iterations of the plan. The Town’s experience implementing the plan has made clear that more detailed consideration of funding mechanisms and innovative approaches to financing is essential to unlocking the full potential of energy efficiency, clean energy, and low-carbon technologies.

Moving toward an 80% by 2050 emission reduction target as approved by Council will require implementation of larger-scale and more intensive interventions and projects. This suggests that the funding implications associated with these types of activities will be a primary consideration during this planning phase. As a result, the updated plan will include the development of a detailed low-carbon financing strategy as a central component of the plan development. Without a detailed funding model, it is likely that financing will remain a central barrier to effective implementation of the updated plan.

The updated recommendations will benefit current and future generations through a focus on efficiency, conservation, renewable energy opportunities and greenhouse gas emissions reductions. Implementation will translate into measurable financial benefits through improved energy efficiency in the Town’s corporate operations, and drive measurable progress towards the Town’s updated 2050 GHG reduction targets.

1.3 Alignment with Other Town Priorities and Initiatives

Completing an updated Corporate Energy Plan aligns with and supports numerous Town priorities, plans, policies (both existing and emerging) including Council’s Strategic Action Plan, the Official Plan, the Integrated Community Sustainability Strategy, the Green Development Standards program, the Corporate Sustainable Building Policy, as well as the Town’s membership commitment to completing the Federation of Canadian Municipalities’ and ICLEI Canada’s Partners for Climate Protection program.

2 Guiding Principles

As with the previous iteration of this plan, the Updated Corporate Energy Plan will be “strategic” in nature in accordance with the following principles, and as defined within Report No. ADMIN-2012-0031:

- Ensure that the Town of Halton Hills meets its commitments under the Partners for Climate Protection Program, as they relate to the completion of Milestones 4 and 5;
- Ensure that the Plan’s recommended actions follow the PAREE principle (Practical, Affordable, Reasonable, Educational and Enforceable) as identified in the Town of Halton Hills Green Plan;
- Optimize financial savings through energy savings;

- Assess the Town's energy use, and associated costs and greenhouse gas emissions;
- Reduce the environmental impact of Town operations, and provide corporate leadership in adopting a culture of conservation and sustainability;
- Develop internal capacity within the Town to undertake energy management, monitoring, analysis and reporting functions; and
- Ensure that the Town is able to take advantage of available incentives.

In order to ensure that the plan meets current best practices for corporate energy management, the plan will also align with the ISO 50001:2018 Standard for Energy Management Systems. Consultants will refer to figure 1 (below) and demonstrate how the plan and associated implementation strategies align with ISO 50001:2018. While the Town will likely not seek full certification with the ISO, the plan should be prepared so that full certification would be achievable.

3 Project Scope, Governance, and Structure

3.1 Overview

The objective of this project is to update and build on the 2014 Corporate Energy Plan (CEP), in accordance with the plan renewal schedule contained in the CEP. The updated Corporate Energy Plan will identify new strategies and actions that support the Town's commitment to energy efficiency and emission reductions and align with the GHG targets adopted in 2017. The updated plan will also enable the Town to complete Milestones 4 and 5 of the Partners for Climate Protection Program. The plan will deliver a practical roadmap that will translate into efficiencies, reduced operating cost, lower greenhouse gas emissions, increased community awareness, and renewed corporate leadership.

The objective of the plan is to develop a systematic, data-driven process for continually improving energy performance. In addition to the development of an energy baseline for all town operations, the plan will establish key energy performance indicators (EnPIs) to enable the Town to demonstrate energy performance improvement based on the Plan-Do-Check-Act (PDCA) cycle outlined in ISO:50001 (see figure 1 below).

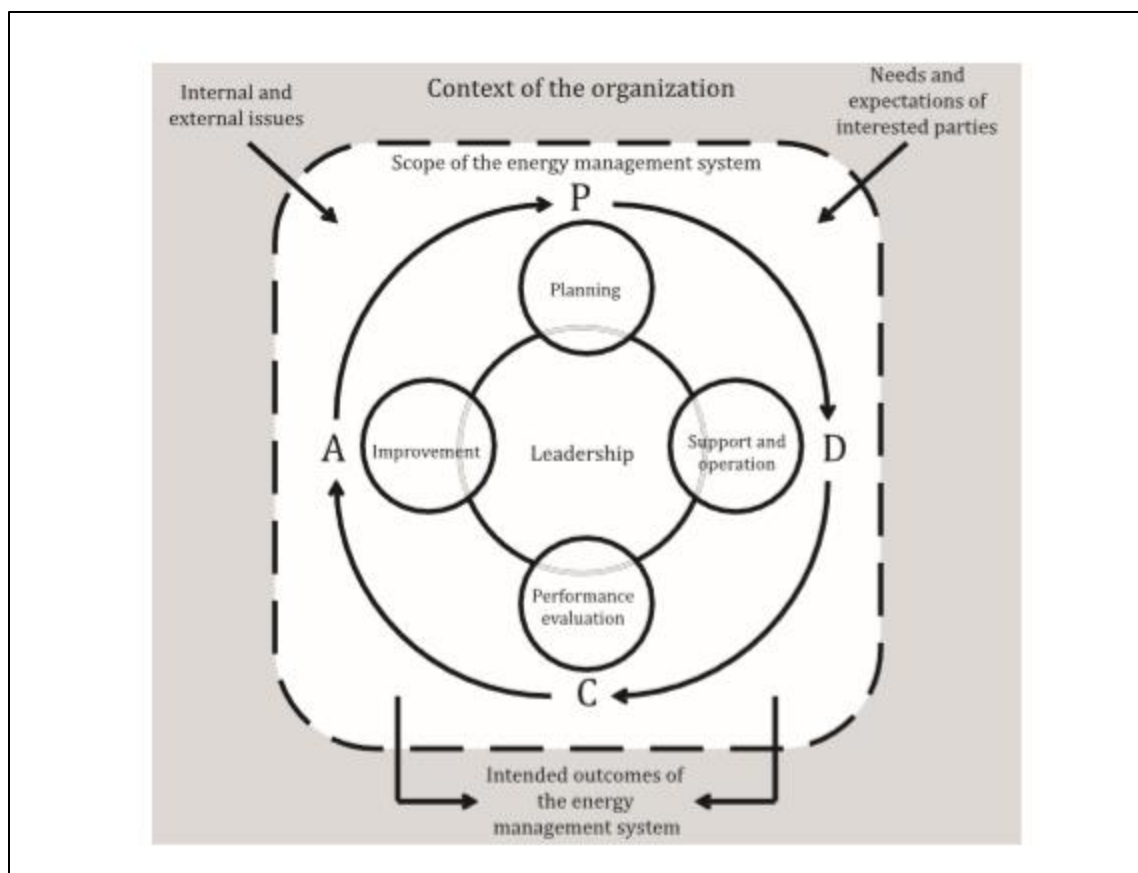


Figure 1: Plan-Do-Check-Act Cycle (ISO 5001:2018)

3.2 Steering Committee

As part of the plan development process the Town will convene a project management team and a steering committee. The project management team will oversee the effective and timely completion of the project deliverables and ensure that the consultant is properly resourced to complete the project scope. The steering committee will be comprised of members of the existing Corporate Energy Management Team and any other relevant stakeholders from within the Town. This body will meet at key points throughout the plan development process, as proposed by the consultant, in order to provide input, subject-matter expertise, and feedback on plan components. Where required, the consultant will first present components of the plan to the steering committee. Following appropriate revisions, the information will then be presented to senior management and Council.

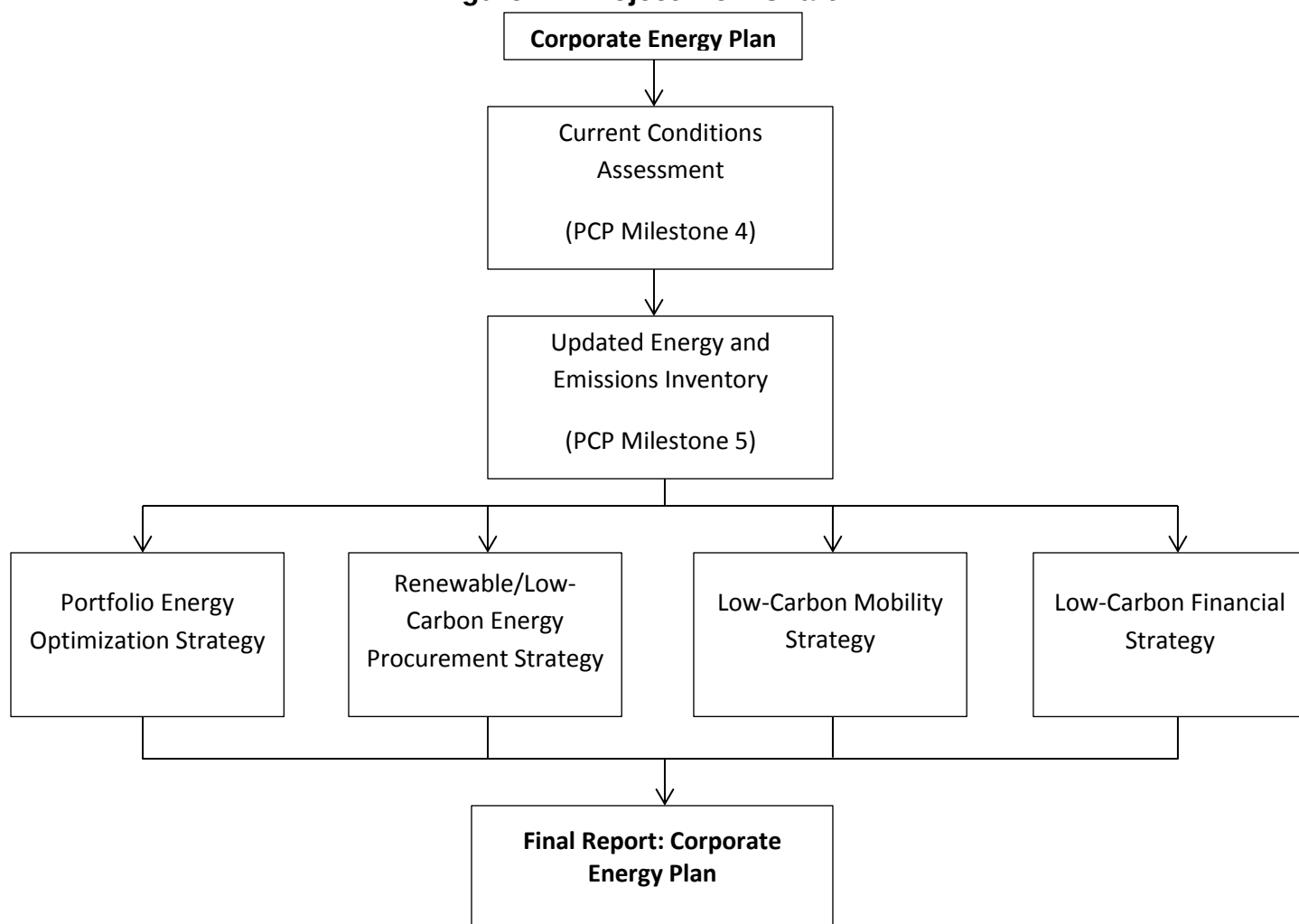
3.3 Project Scope and Structure

As outlined in Figure 2 (below) the updated Corporate Energy Plan will involve the development of an updated energy and emissions inventory and an assessment of the current state of implementation of the 2014 Corporate Energy Plan, to be completed by

Town staff. The second component will involve the development of four connected strategies: a Portfolio Energy Optimization Strategy to optimize facility energy consumption, a Renewable/Low Carbon Energy Procurement Strategy to increase the Town's use of renewable energy, a Low-Carbon Mobility Strategy to address emissions resulting from the Town's vehicle fleet and employee vehicles, and a Low-Carbon Financial Strategy aimed at developing a comprehensive funding strategy to fully fund the plan's implementation.

The Town is seeking proposals for a consultant to develop portions of this plan, as outlined in this scope of work. All other tasks will be completed in-house by existing Town staff.

Figure 2 – Project Flow Chart



3.4 Phase 1: Current Conditions Report

Task 1: Current Conditions Assessment

The Current Conditions Report will be completed by Town staff and will evaluate the progress made on implementing the 2014 Corporate Energy Plan, as well as any other relevant actions that have been implemented. The goal of this report is to assess:

- Actions implemented to date
- Emissions impacts of major actions, where feasible
- Key institutional strengths and weaknesses to be addressed in the updated plan
- Lessons learned from implementing the 2014 plan

The Current Conditions Report will also assess the sufficiency of existing resources and capacities to implement future measures, any relevant changes to operations, such as major planned facility expansions, and what efficiency measures are currently being implemented. This report will enable the Town to understand the overall effectiveness of the existing corporate implementation framework and identify any gaps that should be addressed by the revised CEP.

Task 2: Updated Energy and Emissions Inventory

Town Staff will develop an updated corporate energy and emissions inventory. The inventory will be developed according to the requirements of milestone 5 of the PCP program and be aligned with the most recent standard for community-scale emissions accounting – the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. In accordance with ISO 50001:2018, all significant energy uses (SEUs) will be accounted for. The inventory will include:

- Updated information on energy consumption for the 13 Town facilities that report to the province of Ontario.
- An inventory of fuel consumption in the municipal fleet, including gas, diesel, and biodiesel at the highest level of disaggregation available
- An analysis of fuel consumption and emissions associated with employee commute.
- A re-evaluation of the 2011 baseline emissions to add additional emissions sources, in order to ensure comparability across years.

The development of an updated energy and emissions inventory satisfies a number of objectives. It provides a detailed accounting of energy use at town facilities in light of the measures that have been implemented since 2014, fills gaps in the inventory undertaken during the development of the 2014 Corporate Energy Plan by including the municipal fleet, and places the town in line with emerging best practices in corporate emissions accounting by including employee commutes.

3.5 Phase 2: Updated 5 Year Conservation and Demand Management Plan

Updating the corporate energy plan in 2019 will address four opportunities for improvements based on lessons learned from implementing the 2014 plan:

1. While the Town achieved the energy intensity targets in the 2014 plan, the rapid growth of Town facilities has meant that the absolute emission reduction targets were missed. Furthermore, the Town has adopted new, more ambitious emission reduction targets since the 2014 plan was completed. As a result, a new approach to efficiency is required which can substantively increase the energy efficiency of new and existing facilities. Such strategies can take advantage of the rapid development in energy efficiency technologies and design strategies that have emerged since 2014.
2. Although the Town can significantly reduce energy consumption in facilities, much of the Town's energy consumption results from processes that are likely to remain in the future. For example, the arenas and community centers involve inherently energy intensive processes such as running ice rinks and pools. Energy demand remaining after energy efficiency measures have been applied will require an exploration of low-carbon or carbon neutral energy sources.
3. The 2019 Corporate Energy Plan update provides an opportunity to include energy use associated with the municipal fleet and employee commutes. Including these sources in the corporate inventory will allow the Town to better understand the contribution of the fleet and employee commutes to the overall Town energy and emission profile and expand upon important existing initiatives like Smart Commute and the Fleet Management Strategy currently being developed.
4. Many of the actions implemented through the 2014 plan were 'low-hanging fruit' that were either low/no cost or had very short paybacks. Over the next planning period, it will become increasingly necessary to explore actions that are more complex and resource intensive to implement. As a result, successful implementation of the next phase of corporate energy management actions warrants the development of a comprehensive financing strategy.

The completion of an updated Corporate Energy Plan will outline updated approaches in these areas through four distinct but interconnected strategies, to be completed concurrently. Each of the strategies will provide a description of what will be done, how it will be done, who will be responsible, how it will be completed, costs and financing mechanisms, and how results will be evaluated, including relevant EnPIs. The strategies are described in greater detail below. All actions under phase 2 will be completed by the consultant, with support and input from the steering committee and project management team.

3.5.1 Portfolio Energy Optimization Strategy

The consultant will provide a comprehensive building energy management strategy that significantly increases energy efficiency across the building portfolio with a deep-dive into potential strategies to address the five highest energy consuming buildings in the portfolio – Mold-Masters SportsPlex, Acton Arena, Gellert Community Centre, Public Works Operations Centre, and Town Hall. The consultant will provide an analysis based on consistent and transparent methodology to identify, assess and prioritize projects to guide the allocation of funding to projects and deliver project-level economic analyses across the portfolio with links to the low-carbon financial strategy. A central goal of this task is to focus on a pathway to net-zero energy for applicable buildings, and to aim toward phased implementation of deep energy retrofit strategies that can deliver economic, occupant and employee well-being benefits.

The consultant will provide:

- An energy reduction goal for Town facilities that aligns with the Town's overall 2050 GHG target and specific targets for individual facilities to be achieved within the 5 year planning period.
- An analysis of the baseline conditions of existing Town facilities to be developed in consultation with facilities staff, including current energy consumption, a scan of current building conditions and planned upgrades, as well as additional information that may be necessary to improve identification of measures during plan implementation.
- A description of energy efficiency measures to be implemented in order to achieve the overall retrofit strategy. These should aim to achieve deep energy reductions through step-wise/staged implementation in order to take advantage of system level interactions and should be aligned with key trigger events such as major capital improvement of facilities. The consultant should provide a calendar of trigger events and associated improvements that the Town can use to prioritize measures.
- A strategy to align portfolio and facility manager activities such as equipment upgrades with the energy optimization strategy and an energy management strategy.
- Cost, energy, and emissions impacts of above measures, as well as financial implications for the town.
- The development of a tracking and verification methodology to be used by the town in order to evaluate the impacts of implementation.
- An analysis of the linkages, co-benefits, and potential conflicts with other components of this project, especially the energy procurement strategy and the green investment strategy.
- An analysis of the linkages, co-benefits, and potential conflicts with Town's climate change adaptation strategy.

3.5.2 Renewable/Low Carbon Energy Procurement Strategy

The consultant will develop a detailed low-carbon energy procurement strategy, with the goal of approaching 100% corporate emissions free energy supply by 2050. The consultant will identify and assess the feasibility of implementing renewable energy projects at town facilities, with an emphasis placed on thermal projects such as solar hot water and geothermal. These projects should align with the retrofit measures described in the portfolio optimization strategy. Projects and policies to be implemented over the 5 year plan will advance the use of low carbon and/or renewable energy by the Town and will establish a pathway toward the achievement of 100% renewables by 2050.

Where the existing load cannot be met through the development of onsite renewable energy generation, the consultant should provide a strategy for meeting that demand through alternate models by 2050, for example through power purchase agreements, renewable energy credits, virtual generation or other mechanisms. The consultant will make recommendations for establishing these in the 5 year plan horizon through discussions with relevant stakeholders in the Town and the local utility.

The consultant will provide:

- An assessment of potential corporate renewable energy projects to be completed for 2050, with prioritization of projects to be implemented in the 5-year plan implementation window.
- A feasibility study of low-carbon energy projects to be completed within the plan timeframe and alignment with trigger events and efficiency measures identified in the portfolio energy optimization strategy.
- An assessment of options for obtaining low-carbon or renewable energy where on-site renewable generation potential has been exhausted or is not available to meet remaining demand.
- An analysis of the linkages, co-benefits, and potential conflicts with other strategies, especially the portfolio energy optimization strategy and Low-Carbon Financial Strategy.
- Cost, energy, and emissions impacts of above measures, as well as financial implications for the town.
- An analysis of the linkages, co-benefits, and potential conflicts with Town's corporate climate change adaptation strategy.
- An analysis of the linkages with the Town's community energy initiatives

3.5.3 Low-Carbon Mobility Strategy

The updated plan will include the development of a strategy to avoid or reduce fuel consumption from mobile sources and transition to low-carbon vehicles where possible. The consultant should undertake a detailed study of fleet vehicles and service needs in order to identify the potential for replacing vehicles with low/no carbon alternatives and adopting low-carbon fuels. Where low-carbon fuel technologies are not available, consideration should be given to innovative strategies for reducing fuel consumption.

The development of this strategy will be coordinated with the public works fleet coordinator and existing fleet management strategies. The low-carbon mobility strategy will also explore options for reducing energy consumption and emissions associated with employee commutes, through actions that encourage and enable the uptake of low-carbon fuel alternatives by Town staff, and strategies such as teleworking that reduce the need to commute where appropriate.

Consultant will provide:

- An assessment of current fleet composition and future fleet needs within at least the 5-year planning horizon.
- A low-carbon vehicle strategy to 2050 and detailed actions to be undertaken towards this strategy within the 5-year plan based on current and anticipated fleet needs which will be aligned with the Town's fleet management strategy.
- A strategy to optimize fuel consumption in existing fleet operations, through measures such as maintenance, anti-idling, and right-sizing, and other programs.
- A strategy for reducing fuel consumption and emissions associated with employee commutes. This strategy should explore corporate actions that will:
 - o Reduce total employee commute kilometers through adoption of telework, and other mechanisms, where appropriate.
 - o Encourage and facilitate staff adoption of low-carbon transportation options, electric vehicles, human powered transportation, and potential future public transit, through staff education, incentives, and other programs.
- Cost, energy, and emissions impacts of above measures, as well as financial implications for the town.
- Linkages, co-benefits, and conflicts with other strategies in this plan.
- Linkages, co-benefits, and conflicts with Town's corporate climate change adaptation strategy and community energy plan, transportation master plan, active transportation master plan, and transit servicing strategies.

3.5.4 Low-Carbon Financial Strategy

Creating a Corporate Energy Plan that can be effectively implemented requires careful attention to funding mechanisms and methods of calculating costs and benefits associated with different projects. The goal of the low-carbon financial strategy will be to operationalize the implementation of energy efficiency, renewables, and low-carbon mobility as core Town priorities through the development of a detailed funding model that ensures that all strategies identified in the plan can be fully funded over the plan period.

The low-carbon financial strategy will provide a detailed description of the mechanisms for funding energy initiatives, methodologies for assessing cost and savings associated with initiatives, and implications of the plan for the Town's funding processes more generally. It is anticipated that the updated plan will be developed closely with Town finance staff, including through their participation on the steering committee.

The consultant will provide:

- A comprehensive financial analysis of each measure proposed in the portfolio energy optimization strategy, the renewable energy procurement strategy, and the low-carbon mobility strategy. This analysis should include a cost/benefit analysis that will assist the Town in prioritizing actions over the 5 year plan horizon. This analysis should employ assessments of project economics such as Net Present Value, Life Cycle Cost Analysis, and Internal Rate of Return, in addition to Simple Payback calculations.
- An itemized description of funding sources that will cover the cost of all measures, whether through capital budgets, third-party incentives and funding, or other mechanisms. An outline of policy changes that will assist the Town in meeting the funding requirements associated with the strategies detailed in the updated plan will also be required.
- A description of funding mechanisms to be used, including any innovative strategies, and the policy changes and actions needed to implement these mechanisms.
- A description of how the above strategy aligns with and can be integrated with the Town's long-term financial plan.
- A detailed description of any recommended changes to Town procurement and investment policies that can help assure the successful implementation of the updated plan.

4 Role of the Project Management Team and Steering Committee

4.1 Project Management Team

The project management team will consist of the Manager of Sustainability & Climate Change, and the Senior Sustainability Planner & Energy Coordinator.

The purpose of the project management team will be to:

- Manage the consultant during the project
- Ensure timelines are met
- Ensure that the consultant has access to necessary resources and data
- Review and provide feedback on project deliverables
- Provide overall technical guidance and direction on the development and completion of the plan.
- Act as the liaison between the consultant and Senior Management, Council, the steering committee, and other stakeholders

4.2 Steering Committee

The Steering Committee will be comprised of the members of the Corporate Energy Management Team, with other stakeholders as recommended by the consultant and agreed to by the Town.

The purpose of the Steering Committee will be to:

- Provide technical input to the study
- Assist with issue identification
- Provide details on the Town's corporate energy conservation measures
- Provide facility energy use data
- Provide information on the Town's past, current and planned energy conservation initiatives
- Review and provide feedback on project deliverables
- As required, assist with and provide guidance and input, into facility assessments
- Liaise with staff and applicable organizations.

5 Town Responsibility

The Town of Halton Hills Planning and Sustainability Department, through the Office of Sustainability, will be responsible for managing the completion of the updated Corporate Energy Plan. This will be accomplished in close collaboration with the Steering Committee.

The responsibilities of the Project Team will be to:

- Develop and provide the consultant with the energy and emissions inventory for the Town's operations
- Conduct and provide the consultant with an assessment of the previous energy plan
- Coordinate input and participation of the Steering Committee/Project Team
- Ensure that financial resources are well managed
- Ensure compliance with the Terms of Reference
- Ensure participation of relevant stakeholders
- Coordinate communications
- Coordinate with other studies as appropriate
- Submit the completed study to the Partners for Climate Protection Program

6 Consultant Responsibility

The project consultant will be responsible for the completion of the updated Corporate Energy Plan. This will be accomplished in close collaboration with the Project Management Team and the Steering Committee.

The responsibilities of the consultant will be to:

- Develop and deliver a project work plan, project schedule, and stakeholder engagement plan
- Develop and deliver all tasks described in section 3.5
- Propose a schedule of consultation meetings with Steering Committee and any others necessary for completion of the plan
- Maintain effective communications with the Project Management Team
- Complete any necessary revisions to plan deliverables as required by the Project Management Team and Steering Committee
- Ensure that project costs do not exceed the budget outlined in their proposal
- Ensure compliance with the Terms of Reference/Scope of Work