

Applicant information

Question 1

Please provide information on the community that is submitting this application. If this application is being submitted by a group of communities, add each community separately using the button. If this application is being submitted by a regional entity, please include the name of the regional entity with each individual community (e.g. City of Dunn/Smith Region). Do not include the regional entity as a separate, stand-alone community.

Community (Town of Halton Hills)

Name of community Town of Halton Hills
Province or Territory Ontario
Population based on 61161
Indigenous community No

Question 2

Please select a prize category.

\$10 million (population under 500,000 residents)

Problem definition

Question 3

Please define your Challenge Statement in a single sentence that guides your preliminary proposal. It should describe the outcome (or outcomes) you hope to achieve.

Halton Hills will become the leading 21st century low carbon community by accelerating the adoption of electric vehicles through the development and deployment of a network of internet connected electric car charging stations.

Question 4

Please describe the outcome (or outcomes) your proposal seeks to achieve by elaborating on your Challenge Statement.

This section should include:

- Specific goals you hope to achieve by implementing your proposal, justifying both the level of ambition and the achievability of the outcome (or outcomes) sought.
- Baseline data and evidence to establish the current state with respect to the metrics used in your

The project would achieve the following goals:

1. Develop a combination Level 2/ Level 3 internet connected electric card charging station with Vehicle to Grid (V2G) technology;
2. Develop a smart phone application that connects to the electric vehicle charging stations and enables the user to: find an available station, select a charging speed (Level 2 or Level 3), pay for the electricity used to charge their car, and get notified when their car is charged etc. The app would enable the Town to: recover costs (charge for use), participate in conservation demand

Challenge Statement, and context around the outcome (or outcomes) sought.

- Evidence to support the selection of this/these outcome (or outcomes) over others, in reference to the needs of the community.
- Rationale for applying a smart city approach to achieving the identified outcome (or outcomes).
- Strategy for measuring progress toward outcome (or outcomes) and achievement of outcome (or outcomes).

programs, and generate user data.

3. Establish a manufacturing and distribution network to sell the internet-connected electric car charging stations to municipalities across North America.

The idea is to develop an app-connected electric vehicle charging station and a smart phone application that would enable municipalities to charge people to charge up their electric cars and to use the electricity stored in the car batteries to reduce peak electricity demand at key municipal facilities. The app enables users to prepay for charging credits. Users would be able to go to any municipally-owned charging station and use the same credits; they would also be able to select a charging speed depending on how long they plan on parking. The municipality could choose from a wide variety of potential pricing strategies including time of day and charging speed. Halton Hills intends to develop the charging station and the app, deploy 200 charging stations throughout the Town, and partner with a Chinese manufacture and the non-regulated arm of our local distribution company to build and sell the electric vehicle chargers to other North American municipalities.

The V2G feature would enable the Town to save on electricity costs because the Town could potentially draw from the electricity stored in cars attached to the Town's chargers rather than the grid during times of peak demand (i.e. hot July afternoon). Large facilities (i.e. Mold-Masters SportsPlex) pay more for electricity if they have a high demand during times of peak grid demand. This cost is factored into what appears as the "global adjustment" line item on the bill. In order to reduce the global adjustment, peak demand must be reduced, and the Town could do so virtually by temporarily drawing from the batteries of the electric cars parked in its lots instead of the grid. The car owner could set the amount that the town would be allowed to draw (i.e. leave at least 80% charge) and the Town would pay the car owner with car charging credits for future use.

A parking spot finder could also be integrated into the app for all cars, and a charging station finder could be integrated for electric car owners.

Currently, many municipalities across Canada provide free electric car charging stations in order to encourage the accelerated adoption of electric vehicles. For example, Halton Hills installed 14 Level 2 charging stations at the Mold-Masters SportsPlex Arena in 2013, but like many municipalities, does not charge users for the electricity they consume. Doing so currently makes sense because electric vehicles have yet to be widely adopted by society so offering free charging encourages early adoption. However, it is hoped that at some point the adoption of electric vehicles will become so widespread that municipalities will want to switch from providing free electricity to recovering costs by charging users. This project will produce the hardware and software needed to enable Halton Hills and any other municipality in Canada to address this issue.

Halton Hills is uniquely positioned to complete this project thanks to two existing partnerships that will be leveraged for this effort:

South West Energy (SWE): South West Energy is the unregulated arm of Halton Hills Hydro, the Town-owned Local Distribution Company. As a result of the ownership model, SWE and Halton Hills enjoy a close working relationship.

Wenjiang Sister City Partnership: Halton Hills has developed a sister city partnership with Wenjiang China to strengthen cultural and economic relationships between the two regions.

Through the Wenjiang Partnership, SWE and a company called Tayii New Electric from Wenjiang have established a manufacturing (Tayii) and distribution (SWE) partnership.

Halton Hills would design the electric car charging station with Tayii, contract the development of the app to a third party, Tayii would build the chargers and SWE would

	<p>install them in Halton Hills and distribute them to other interested municipalities.</p>
<p>Question 5</p> <p>Please describe how your community residents have shaped your Challenge Statement. Describe your plans for continuing to engage and involve them in your final proposal going forward.</p> <p>This section should include:</p> <ul style="list-style-type: none"> • Descriptions of previous engagement with residents, businesses, organizations, and other stakeholders on topics related to the Challenge Statement. • Descriptions of feedback that came to light through past engagement processes. • Links between the Challenge Statement and engagement feedback. • Evidence of efforts made to be inclusive and to represent the community's diversity. • Plans to sustain engagement through the development and implementation of the final proposal. 	<p>Halton Hills has been engaging our residents on sustainability since 2006. In the last 12 years, we have engaged our community during the development of the Green Plan 2008, the Integrated Community Sustainability Strategy (ICSS) 2013, the Green Development Standards (2014), the Mayor's Community Energy Plan 2015, and the Climate Change Adaptation Plan (currently under development). Through these engagements residents have told us repeatedly that:</p> <ul style="list-style-type: none"> - mitigating climate change by reducing greenhouse gas emissions is a priority for the community - range anxiety remains a principle barrier to electric vehicle adoption - The Town should complement but not duplicate other programs <p>During the development of the ICSS, over 12,000 individual points of contact were made, which represents the single largest community engagement ever undertaken in the Town for one project (1 in 4 residents were engaged).</p> <p>During the development of the Mayor's Community Energy Plan, residents discussed the challenges associated with transportation-related ghg emissions, but due to resource constraints, the Town focused its efforts of reducing building-related ghg emissions through the development of the Town's Green Development Standards. As the second largest source of emissions, Halton Hills had always intended to focus on transportation-related ghg emissions once sufficient resources were made available.</p> <p>Moving forward, the Town will continue to develop the Climate Change Adaptation Plan and will begin updating the Mayor's Community Energy Plan in 2019. As both these projects relate directly to climate</p>

change, the Town has developed an engagement strategy that will keep residents engaged throughout the plan development process and into implementation, of which the electric car charging network will figure prominently

More recently, key Town stakeholders were engaged in determining any threats posed to the Town by climate change.

Preliminary proposal details

Question 6

Please describe your preliminary proposal and its activities or projects.

This section should include:

- Planned activities or projects to achieve the outcome (or outcomes) set out in the Challenge Statement.
- Clear links from the identified projects to the attainment of the outcome (or outcomes).
- Scope and size of each planned project in your preliminary proposal, describing how it is feasible and suitable for achieving the outcome (or outcomes) in a manner that is impactful for the community, ambitious, and transformative.
- Measures put in place to 1) make the proposal open, interoperable, scalable, and replicable or a description of your plan to do so going forward for the benefit of your own community and other communities in Canada; and 2) enable other uses of the technology, innovation, and data in your proposal.

The project will involve a number of activities divided into 2 phases:

Phase 1: Design and Beta Test

Phase 2: Commercialization

The goal of Phase 1 will be to design, build install and beta test 200 internet connected electric car charging stations at various Town-owned parking spots throughout the Town. This will include:

1. Electric vehicle charging station engineering design.
charger characteristics:
 - robust outdoor and vandal resistant design
 - integrate all weather visual interface
 - integrate user selectable Level 2 charging (240v) and Level 3 charging (480v)
 - integrate Vehicle to Grid (V2G) technology
 - integrate internet connectivity

2. Beta android/iPhone smart phone application and back-office software development
app characteristics:
 - map-based available vehicle charging station locator
 - payment system to pay for parking and electricity used
 - instant notification systemBack office support software Characteristics:
 - user statistics and analytics
 - instant notifications to charger users
 - ability to set prices

3. Taiyii New electric will manufacture the 200 vehicle chargers at their manufacturing plant in Wenjiang.

	<p>4. Halton Hills will commission a study to identify suitable locations for the installation of the 200 vehicle chargers</p> <p>4. SWE will install the 200 vehicle charging stations using existing equipment</p> <p>5. Halton Hills will market the chargers and the smart phone application</p> <p>6. Halton Hills will collect and analyze usage statistics and feedback</p> <p>Phase 2: Commercialization The goal of phase 2 is to understand and take advantage of any market opportunities that may exist for the app-connected car charging station in other municipalities. A current market opportunity exists: other municipalities want to install more charging stations charge and will want to charge users for electricity in a convenient fashion. This product fills this market, but the nature and extent of that potential market needs to be understood in order to make informed manufacturing decisions. Phase 2 will involve:</p> <ol style="list-style-type: none"> 1. Halton Hills completing the market opportunities to understand the nature and extent of the potential market 2. Taiyii New Energy manufacturing the vehicle chargers 3. SWE marketing and distributing the chargers for the north American market. 4. Halton Hills transferring responsibility for smart phone application development to SWE.
<p>Question 7</p> <p>Please describe the ways in which your preliminary proposal supports your community's medium and long-term goals, strategies, and plans.</p> <p>To supplement your response, please upload any relevant documents and make clear linkages and references.</p>	<p>As is evidenced by Council's November 2018 decision to adopt a GHG reduction goal of 80% from 1990 levels by 2050, Halton Hills desires to become a leading low carbon community. Like the rest of Ontario, transportation and buildings make up Halton Hills' chief GHG contributors, and the Town is reducing building-related GHG emissions through the implementation of the Halton Hills Green Development Standards, which is why this project focuses on transportation</p>

	<p>GHGs by expanding the electric car charging network and increasing user friendliness.</p> <p>As the sole shareholder in Halton Hills Hydro/South West Energy, Halton Hills is also very interested in ensuring the long term financial viability of SWE and in supporting additional revenue-generating opportunities.</p> <p>Finally, the Town has established the Halton Hills-Wenjiang sister city partnership to create expanded economic exchanges among other things. This project would enable the Town to partner with a Wenjiang-based firm and support the goals of the sister city partnership.</p>
<p>Question 8</p> <p>Please describe your community's readiness and ability to implement your proposal successfully.</p> <p>This section should include:</p> <ul style="list-style-type: none"> • Experience with implementing complex projects (i.e. multi-stakeholder, multi-dimensional) that span multiple business lines and functional units. • Structures, processes, and practices in place or planned for managing and implementing complex projects that span multiple business lines and functional units. • Organizational strengths and potential weaknesses for managing and implementing a smart city proposal, and plans to address weaknesses to ensure successful proposal management and implementation. 	<p>Our community is ready to implement this project. From the plans to the partnerships to the human resources and expertise, we are ready to hit the ground running.</p> <p>Halton Hills' Office of Sustainability will take the project management responsibilities and play a central coordinating role in collaboration with staff from the Office of the Chief Administrative Officer. The organization has a wide range of experience in managing complex interdisciplinary projects. The Office of Sustainability developed this project concept and has the experience and capacity and rive necessary to manage this project.</p> <p>SWE specialize in utility-grade electrical work and have the expertise, manpower and equipment required to install the 200 vehicle chargers.</p> <p>Taiyii New Energy is a thriving manufacturing company that specializes in the manufacture of clean technology solutions such as off-grid solar powered streetlights.</p> <p>Together, the three organizations will be able to bring the necessary regulatory, manufacturing, installation and project management skills necessary to ensure the success of this project</p>

<p>Question 9</p> <p>Describe your plan for using the \$250,000 grant, should you be selected as a finalist. Provide a high-level breakdown of spending categories and an accompanying rationale.</p>	<p>\$125k: Internet connected car charging station blueprint development \$75k: Smart phone beta application development \$50k: charging station installation location study</p>
<p>Question 10</p> <p>Describe the partners that are or will be involved in your proposal. Where partners are not yet determined, describe the process for selecting them.</p> <p>This section should include:</p> <ul style="list-style-type: none"> • A description of existing partners (what type of organization, what they do, etc.), their relevance, and expected contribution to the outcome (or outcomes). • Where partners are not yet determined or where it is anticipated that additional partners are required, describe the process for selecting them. 	<p>SWE specialize in utility-grade electrical work and have the expertise, manpower and equipment required to install the 200 vehicle chargers.</p> <p>Taiyii New Energy is a thriving manufacturing company that specializes in the manufacture of clean technology solutions such as offgrid solar powered streetlights.</p>
<p>Question 11 (confidential annex)</p> <p>Please provide, if and only if required, confidential third party information. Information provided in this section will be exempt from the requirement to be posted online.</p> <p>Third party information in this section should be supplemental to the information provided elsewhere in the application and be limited to those details that are deemed confidential. Please clearly indicate to which question(s) the information provided in this section relates.</p>	
<p>Other requirements</p>	
<p>Question 12</p>	<p>The App-Connected Level2/3 V2G Enabled Electric Vehicle Charging Station Project involves:</p>

<p>Provide a summary of your preliminary proposal. This summary, along with your Challenge Statement, will be posted online in both official languages.</p> <p>You have the option of providing the summary in both official languages. If you provide it in one official language, Infrastructure Canada will translate it prior to posting online.</p>	<ol style="list-style-type: none"> 1. Developing a vehicle charging station that is connected to an app so users can find an available station, pay for parking, pay to charge their car, and get notified when charging is done. 2. Developing a smart phone application for android and iPhone. 3. building and installing 200 charging stations throughout Halton Hills 4. Beta-testing the system and monitoring performance. 5. Understanding potential market opportunities for the charging stations. 6. Wide-scale commercialization. <hr/>
<p>Question 13</p> <p>Provide the link to the online location where you will post your responses to questions 1 to 10. You may also provide your responses to any other questions. Your responses must go live on the URL provided once you have received confirmation in early to mid-May that your application is eligible.</p>	<p>http://www.haltonhills.ca/smartcities2018</p>
<p>Question 14</p> <p>In accordance with your governance structure, provide evidence of the commitment to your preliminary proposal from your community's leadership. This can be a letter of support with signatures from your mayor(s), chief(s), or equivalent or a council resolution, a band council resolution, etc.</p>	<p>smart cities authorization.pdf (360.16kb) smart cities authorization1.pdf (787.46kb)</p>
<p>Question 15</p> <p>Please identify the point of contact for the application.</p>	<p>Contact name: Gabriel Clarke Contact title and affiliation: Manager of Sustainability and Climate Change Contact phone number: 9058732601 Extension (optional) 2256 Contact email address: gclarke@haltonhills.ca</p>
<p>Question 16</p> <p>Read the Consent and Release Form and Communications Protocol, and indicate your</p>	<p>I represent that I am duly authorized by the Applicant to indicate agreement with this Consent and Release Form and Communications Protocol and that I have a full understanding and comprehension of its</p>

agreement.

You can download the documents [here](#).

terms.

I have [read and accepted](#) the terms.

Survey questions

Question 17

For each community, provide the following information:

2017 full-time equivalents (FTEs):

- Number of total FTEs
- Percentage of total FTEs devoted to innovation

2017 operating and capital budgets:

- Total operating budget
- Percentage of total operating budget devoted to innovation
- Total capital budget
- Percentage of total capital budget devoted to innovation

Community (Town of Halton Hills)

Number of total FTEs: 250.00
Percentage of total FTEs devoted to innovation: 1.00 %

Operating budget

Total operating budget: \$ 76,294,308.00
Percentage of total operating budget devoted to innovation: 1.00 %

Capital budget

Total capital budget: 18,900,000.00
Percentage of total capital budget devoted to innovation: 1.00 %

Question 18

Please select the focus area of your preliminary proposal.

If your preliminary proposal seeks to achieve outcomes that span more than one area, you may choose up to two.

Focus area - 2 maximum

Economic opportunity
Environmental quality

Question 19

Select all the community system/service areas expected to be implicated in your preliminary proposal.

There is no limit to the number of community systems/service areas you may select.

Community system/service

Economic development
Environment
Land use planning and development
Roads and transportation
Other

Question 20

Select all the technologies expected to be implicated in your preliminary proposal.

There is no limit to the number of technologies you may select.

Technologies

Autonomous and connected vehicles

Geospatial

Internet of Things (IoT)

Mobile applications

Payment platforms

Other

Smart Cities Challenge Team

Infrastructure Canada

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