QUEST | Net-Zero Communities Accelerator Program

Energy Mapping Exercise Final Report

January 2024

Submitted to:

Town of Saint Andrews
NEW BRUNSWICK, CANADA

TOWN OF BAYSIDE, CHAMCOOK AND SAINT ANDREWS, NB

ACKNOWLEDGMENTS

Lead Authors

Eric Timmins, Senior Lead, Projects & Advisory Services, QUEST Canada
Kareema Batal, Project Assistant, QUEST Canada
Heldagardis Renyaan, Lead, Projects, QUEST Canada

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QUEST

About QUEST Canada

QUEST Canada is a registered Canadian charity that supports communities in Canada on their pathway to net-zero. Since 2007, QUEST has been facilitating connections, empowering community champions and advising decision-makers to implement efficient and integrated energy systems that best meet community needs and maximize local opportunities. QUEST develops tools and resources, convene stakeholders and rights holders, and advise decision-makers — all with the goal of encouraging, assisting and enabling communities to contribute to Canada's net-zero goals.

QUEST Canada recognizes communities that have embraced these principles by referring to them as Smart Energy Communities.

Learn more about QUEST Canada and join the network at questcanada.org.

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1.0 Executive Summary

1.1 What Is This Report About?

The Town of Saint Andrews participated in an Energy Mapping Workshop facilitated by QUEST, as part of the NB Smart Energy Community Accelerator Program. In 2023, QUEST conducted a review of the energy mapping exercise, to include the wider territory of Saint Andrews and neighbouring communities amalgamating into the new Town of Bayside, Chamcook, and Saint Andrews.

This report summarizes the results of the exercise, including diverse stakeholder perspectives on the opportunities for energy efficiency, waste energy integration, renewable energy, land use, transportation, and more — with an eye to reduce energy costs and greenhouse gas (GHG) emissions in the community.

The workshop was attended by 13 participants representing diverse stakeholder groups, including municipal staff, regional service commission, elected officials, utilities, and the Environmental Action Committee (EAC). A presentation was delivered by the Regional Manager from NB Power, regarding available programs and services.

1.2 Who Is It Intended For?

This report is intended to inform the municipal staff and councillors, as well as stakeholders and the broader public about:

- Opportunities to improve energy efficiency, integrate clean energy, improve transport etc., as part of a Community Energy Plan, and,
- Targeting of measures and partnership facilitation

QUEST Canada appreciates the opportunity to work with the Town of Saint Andrews and local stakeholders to identify opportunities for integrated community-scale solutions to lower energy costs, reduce GHG emissions, and improve local resilience.

1.3 High-level Summary of Key Findings

Based on the results of the pre-survey and the workshop exercise, the Town of Bayside, Chamcook, and Saint Andrews has the following opportunities to advance community energy and emissions reduction initiatives.

Table 1: Description of Strengths and Areas for Improvement/Opportunities

Areas	Key Areas for Improvement/Opportunities:
Energy Efficiency	Energy efficiency retrofits for: ● Community properties — the arena complex, Town Hall, Bayside Community Hall, public works, reservoir, library, Bayside Industrial Park, Bayside campground ● Secondary and post-secondary schools ● Commercial and Industrial properties ● Energy Study with plans to hit net zero on Town's top 5 emitting facilities, the W.C. O'Neill Arena Complex, Water Treatment Plant, Wastewater Treatment Plant, Town Hall, and the Ross Memorial Library.
Waste and Renewable Heat	Sources Identified: ● Municipal wastewater treatment facilities ● New Brunswick Community College (NBCC) campus ● Arena complex ● Saint Andrews Wellness Centre ● Microbrewery ● Bayside Port Corp Freezer Plant/ Warehouse ● Cold storage facility End Uses: ● Arena ● Schools — secondary and post-secondary ● Town Hall ● Bayside Community Hall
Renewable Power	Sources: ● Wind/solar farm development in the Passamaquoddy Bay ● Biomass generation from Kingsbrae Garden ● Rooftop solar on commercial and industrial properties ● Hydro at Chamcook Lake Dam

Areas	Key Areas for Improvement/Opportunities:
	• Tidal/wave Force • Solar potential at the New Brunswick DTI Garage • Solar potential on Ministers Island • Potential solar installations with landowners
Land Use	• Mixed-use development in the upcoming Knowledge Park development • High-density housing opportunity around the golf course • Multiple residential/mixed-use densification opportunities
Transportation	• Transit network spanning key destinations from Bar Road south to the tip of Water Street • EV charging stations at major destinations • Hop in/Hop Off bus service • EV charging station at Rossmount Inn • Park and ride by highway exit, Bayside
Energy Networks	• The Huntsman Marine Science Centre paired with the Saint Andrew's Biological Station • The area surrounding the water reservoir on Movart Drive north of Town • The southeast region of town, around the campground area, water treatment facility, and NBCC • The cold storage facility in Bayside North has the potential to utilize waste heat.
Other	• Collaboration between the Town and entities managing future developments in the area to integrate smart energy actions.

2.0 Community Profile

Located in the southern region of New Brunswick, Canada, the Town of Bayside, Chamcook, and Saint Andrews is located in Charlotte County along Passamaquoddy Bay in New Brunswick. The population within the town's boundaries was 1,786 residents as of the 2016 census. After municipal reform / amalgamations, as of January 1, 2023, the population is now 3000. The Town's Historic District is a National Historic Site of Canada as it has retained much of its 18th-Century character. The Town is also referred to as Saint Andrews-by-the-Sea and is known to the Passamaquoddy First Peoples as Qua-nos-cumcook.

The local climate is cool and temperate, with significant rainfall (1,190 mm) throughout the year. Seasonal flood risk areas have been identified along the waterfront. The Town completed a corporate energy audit in 2008 and has developed a Climate Change Adaptation Plan.

3.0 Community Energy Map Exercise Results

3.1 Goal

This exercise aims to provide participants with a virtual and interactive energy mapping experience to enable them to share knowledge, discuss local opportunities and apply basic techniques for identifying opportunities in a spatial context, including planning local efficiency, clean energy, transportation, and land use actions.

3.2 Overview

The Map Exercise engaged multiple stakeholders, using a digital tool called Mural, to identify opportunities for their Community Energy Plan and initiatives. The exercise enabled participants to denote these opportunities, and discuss various aspects/viewpoints. Below is a summary of the exercise:

3.3 Summary of Results

1. Energy Efficiency

Using green stars and circles, the participants identified potential buildings and neighborhoods for energy efficiency improvements. **These are listed here:**

a) The Town's arena could be a site for energy efficiency upgrades
b) Town Hall: an opportunity to lead by example with energy efficiency upgrades
c) The water reservoir on Mowat Drive could be a site for energy efficiency retrofits and a potential net-zero building in the future
d) Businesses in older buildings on Water Street could be sites for energy efficiency retrofits
e) Algonquin Hotel is a site with potential for energy efficiency upgrades and a potential net-zero site in the future
f) Town fire hall can use retrofits to allow for more efficient heating and cooling, and more efficient lights

g) Knowledge Park on Marine Science Drive is a future development site with opportunity for energy efficiency and net-zero planning ahead of development
h) Passamaquoddy Lodge on Sophia Street is an older building with potential for upgrades and retrofits
i) Energy efficiency upgrades at Sir James Dunn Academy (SJDA) School at the intersection of Prince of Wales Street and King Street
j) A future growth site identified off Bar Road NE of the Town presents an opportunity for energy efficiency planning ahead of development and could be a net-zero site
k) New Brunswick Community College (NBCC) Saint Andrews Campus location has the potential for solar energy upgrades and/or a net zero site in the future
l) Public Works government building
m) The buildings of Huntsman Marine Science Centre and Biological Station and their surrounding area is a potential site for energy efficiency upgrades and net-zero
n) Adoption of electrical maintenance vehicles and tools for sites managed by the Town, such as the woodland site off Joes Point Road
o) Bayside Community Hall, Bayside Industrial Park, Bayside campground could be a site for energy efficiency upgrades
p) The Town has received funding of $200,000.00 from FCM with the Town and the Province of New Brunswick providing an additional $50,000.00 for a $250,000.00 Energy Study with plans to hit net zero onTown's top 5 emitting facilities, the W.C. O'Neill Arena Complex, Water Treatment Plant, Wastewater Treatment Plant, Town Hall, and the Ross Memorial Library. The project is titled " Studying GHG Reduction Pathways at Five Municipal Buildings in the Town of Saint Andrews, New Brunswick."

2. Waste and Renewable Heat

Using red stickers and stars, the participants identified potential waste and renewable heat opportunities. **These are listed here:**

a. The arena's ice plant is a potential waste heat source
b. The new microbrewery in Market Square is a potential waste heat source
c. The Fire Hall's truck bay is a potential waste heat source
d. The water treatment plant is a potential waste heat source
e. Hotel services such as laundry on the site located at the intersection of Elizabeth Street and Water Street is a potential waste heat source
f. NBCC Saint Andrews Campus is a potential waste heat source
g. Site R7 on the map, where yard waste is collected and disposed of, was identified as a potential renewable heat source
h. NBCC Campus is a potential waste heat source from facilities, kitchens and other operations.
i. Kings Spray Garden may produce plant waste that could be a renewable heat source
j. Similar to the fire hall work bays, the Public Works building has truck bays that could be potential sources of waste heat
k. Heat waste from the biological station (heat coils) — Labelled as W14
l. The buildings of Huntsman Marine Science Centre and Biological Station and their surrounding area is a potential waste heat site and also a potential site for building clean heat conversion, such as transferring kinetic energy to heat by harvesting food traffic given the area and surrounding sites are busy tourist locations (labelled as H1)

m. Possibility for waste heat sources from Bayside Port Corp Freezer Plant (labelled as W1) and Cold Storage Facility (labelled as W2)

3. Renewable Power

Using green stickers and stars, the participants identified opportunities to integrate renewable power. **These are listed here:**

a. Kingsbrae Garden could be a combined heat and power site using renewable biomass fuel generated from the plant material on site
b. The Canada Post building on Water Street is a potential site for both solar and wind energy generation
c. The Chamcook Lake Dam is a potential site for a microgenerator
d. The Algonquin Hotel could be a site for renewable energy conversion
e. The water reservoir site is a potential location for solar energy generation
f. The Town's high school on Mowat Drive could be a potential solar generation site
g. Locations such as the Public Works building and the NBCC building could be potential solar generation locations
h. The wastewater treatment centre is an exposed area that could be a solar power generation site
i. The buildings of Huntsman Marine Science Centre and Biological Station and their surrounding area could be an opportune area for combined heat and power generation
j. The flat lands surrounding the Ross Memorial Museum could be a potential solar generation site
k. Utilizing the waters of the Passamaquoddy Bay to the east of the town as a potential conversion site for generating power from tidal wave force, wind turbine or a floating solar field
l. The elementary school on Carleton Street could be a potential site for solar generation
m. An identified open land site at the intersection of Bayview Drive and Cornelia Street could be a potential Biomass generation site from the composting program in that area
n. Road-based small wind turbines along Mowat Drive north
o. Tongue Shoal is a potential site for wind power and/or power generation from waves
p. The Town will explore with private landowners the opportunity for renewable power generation such as solar power
q. Potential solar energy generation at the NB DTI Garage and on Ministers Island

4. Land Use

Using various colors of shading, participants identified zones for densification, mixed use, and restricted development. **These are listed here:**

1. The future development site of Knowledge Park could be an opportunity to increase density and develop employment opportunities for the community through a mixed-use development
2. The region behind NBCC is an opportune site for increased densification
3. The Town's arena could be a site for a green roof
4. The area under development to the northeast of the Town between Champlain Ave and Bar Road could be a site for a subdivision with increased density
5. The region east of Mowat Drive just south of Bar Road could be a site for mixed-use development and increase density and economic opportunity for the town
6. The water reservoir and the wastewater treatment plant could be sites for establishing green infrastructure

7. The area surrounding the golf course could be a site for a high-density development
8. The land in between Mowat Drive and Champlain Avenue could be a site for a high-density housing development

5. Transportation

Using yellow stickers, purple lines, and blue stars, participants identified opportunities for transit amenities, EV charging, trail connectivity / intermodal hubs, etc. **These are listed here:**

1. EV charging station at the campground near Water Street and Ocean Blvd
2. EV charging station at the arena
3. Kingsbrae Garden is a key destination that could be connected through to other regions of the town through a transit network and nearby station at the intersection of King Street and Prince of Wales Street
4. EV charging station at Algonquin Hotel as both a key destination location with heavy traffic use
5. Bird Watch Point is a key destination close to the lagoon that could be connected to the rest of town through a transit network and a nearby station at the intersection of Prince of Wales Street and Saint Andrews Trail
6. EV charging station at Katy's Cove
7. The ferry launch area is a key destination area with potential to be connected to the rest of town through a transit network
8. EV charging station at Huntsman marine Science Centre
9. EV charging station at the Post Office on Water Street
10. EV charging stations at Kingsbrae Gardens
11. Improvements to Brandy Cove Road for active transport connectivity
12. Additional transit networks that connect the north of the Town (by Bar Road) to the south (key locations along the south of Water Street)
13. The Town added a Hop On Hop Off service pilot on a specific route
14. EV charging station at Rossmount Inn
15. Park and ride by highway exit, Bayside

5. Smart Energy Networks

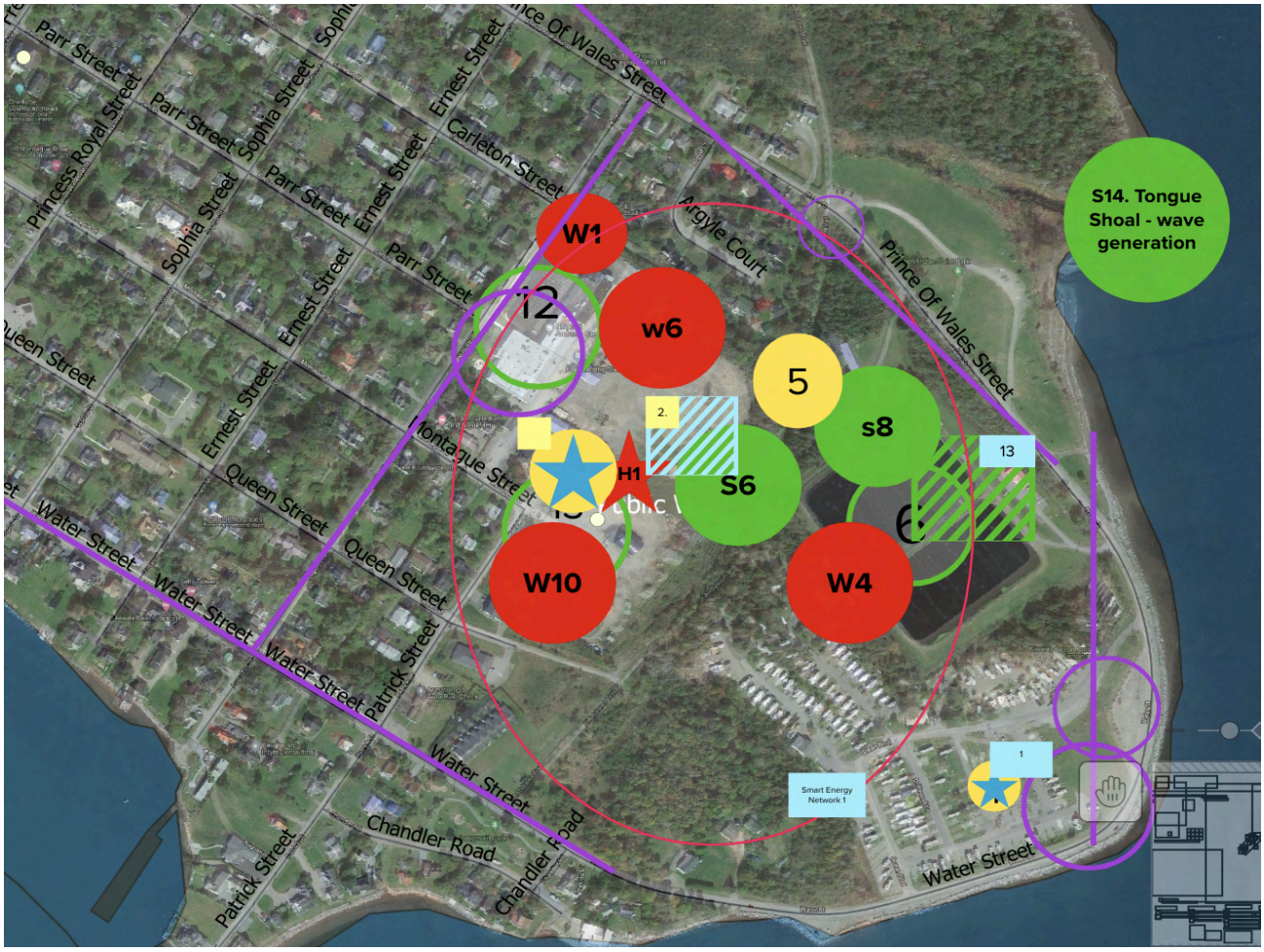
Using a red marker and yellow stars, participants identified potential opportunities for district energy / district heat, etc.

1. The southeast region of town, around the campground area, water treatment facility and NBCC
2. Around Wharf and Market Square, surrounding the Town Hall region
3. Around the Saint Andrews Wellness Centre
4. Around the future growth site identified off Bar Road NE of the Town
5. Around the future development site of Knowledge Park
6. The region of Huntsman Marine Science Centre and Biological Station and their surrounding area
7. The area surrounding the water reservoir on Mowat Drive north of town
8. Identified new waste heat sources at the cold storage facility Bayside North

6. Map Images (photos of marked-up maps, and of the exercise)

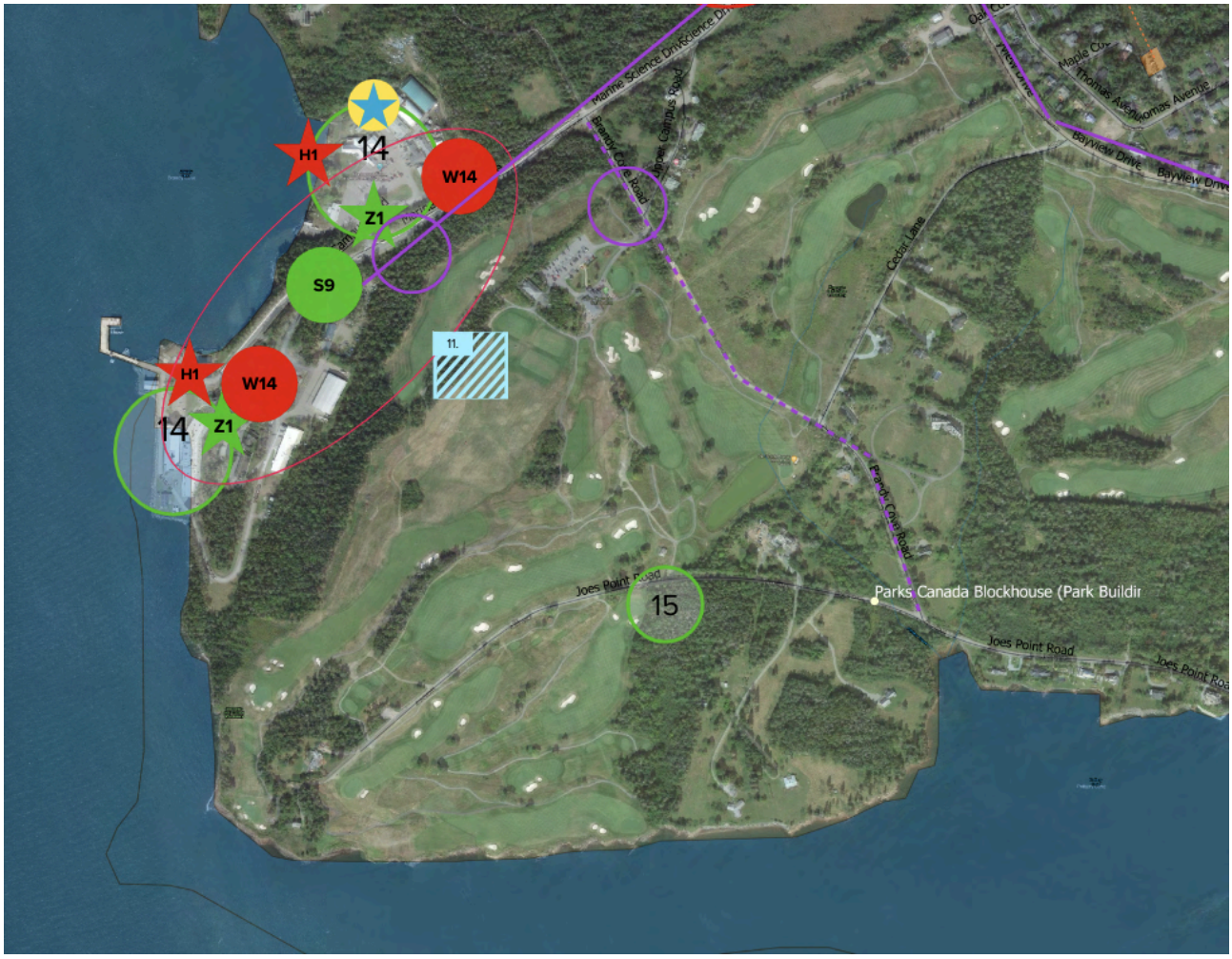
Map #1 (2021)

Map #2 (2021)


S14. Tongue Shoal - wave generation
W1
w6
5
s8
S6
W10
W4
H1
2.
13
Parr Street
Princess Royal Street
Sophia Street
Ernest Street
Carleton Street
Argyle Court
Prince Of Wales Street
Queen Street
Montague Street
Water Street
Patrick Street
Chandler Road
Smart Energy Network 1

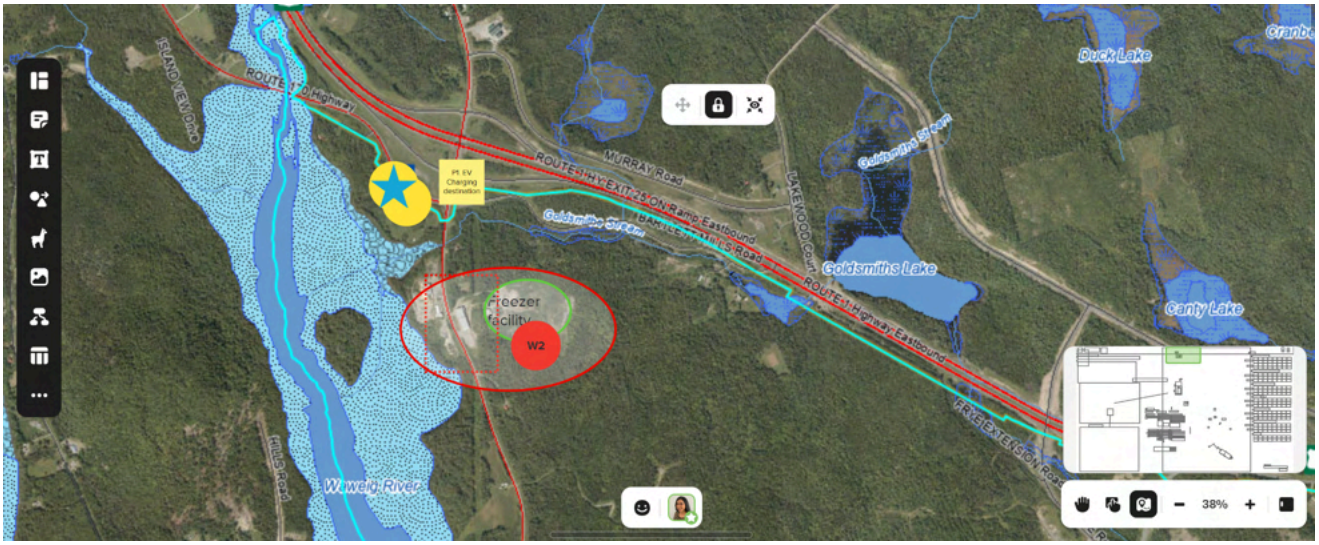
Map #3 (2021)

Map #4 (2021)

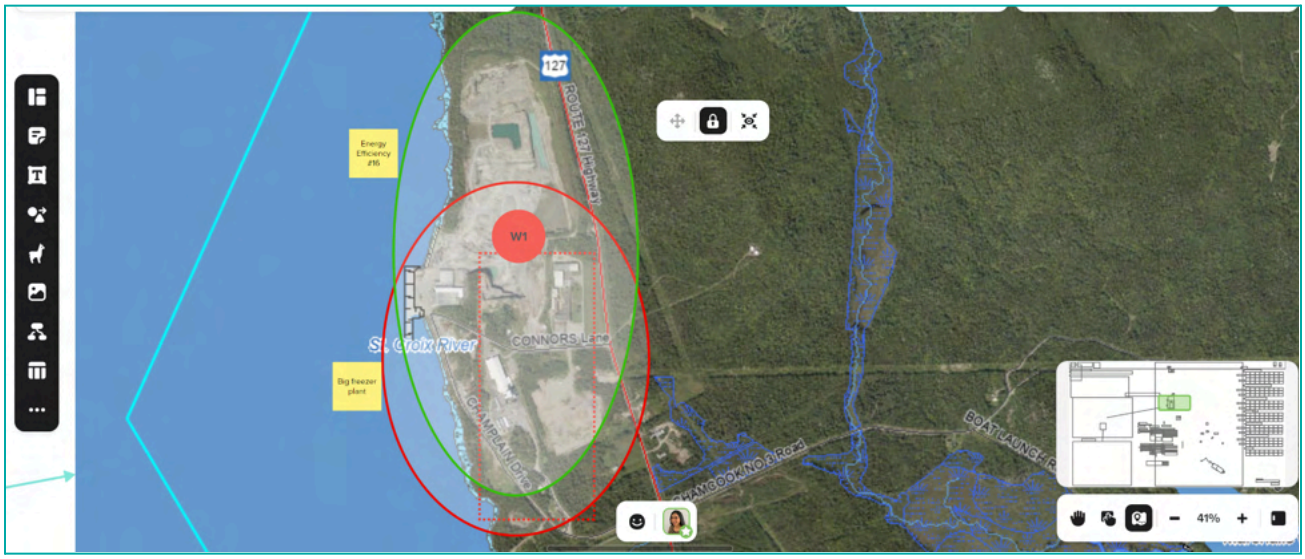

H1
14
W14
Z1
S9
11.
H1
W14
14
Z1
15
Parks Canada Blockhouse (Park Buildir
Joes Point Road
Joes Point Road
Cedar Lane
Bayview Drive
Thomas Avenue
Maple Cir
Marine Science Drive
Science Dr
Brandy Cove Road
Brandy Cove Road

Map #5 (2023)

Map #6 (2023)



Map #7 (2023)



Map #8 (2023)

Map #9 (2023)

Map #10 (2023)

Map #11 (2023)

Disclaimer: Maps were produced with best available data at the time. Decisions based on map information should be taken into context — and QUEST will not take responsibility for any damages caused by decisions made based on these maps.

4.0 Action Planning Round-up

4.1 Goal

Provide participants with an opportunity to discuss the most significant findings, and present their ideas for key areas for improvements, related needs, and potential actions.

4.2 Overview

At the end of the workshop, participants were asked a series of questions. For each question, they wrote their answers on sticky notes in Mural. These sticky notes were arranged onto panels by participants live during the session. The responses are summarized in the sections below.

4.3 Summary of Results

1. After today's exercise, what is your understanding of the community's greatest strengths?

- A variety of municipal/institutional sites to work on as exemplars for community-wide energy efficiency work in the future
- A small and connected area prime for active transportation networks
- Community enthusiasm and commitment to implement smart energy actions
- Numerous sites with a grouping of businesses with a high shared service potential

2. After today's exercise, what is your understanding of the greatest needs/opportunities?

- Funding to accomplish smart energy actions
- Facilitating knowledge within the community around green energy-related opportunities
- Community and Council buy-in to move ahead with smart energy actions
- Financial solutions that will allow the town to get through upfront costs and adopt energy efficiency solutions
- The Town has the opportunity to take leadership on energy matters and drive change
- The possibility for smart energy partnerships throughout the community
- Developing a community approach to smart energy action as we work towards net-zero
- More energy efficiency/conservation opportunities throughout the town than was initially thought

3. What should be done? What is the action? What will I do after this session?

- The community and Council should review items that are actionable
- Community education seminars around family-level opportunities for smart energy action
- Enhance community buy-in through engagement efforts and education
- Include energy efficiency and renewables planning for forthcoming affordable housing developments with a cost–benefits analysis of land use
- Increased lobbying to the provincial government to enhance financing opportunities
- Comparing information gathered to Municipal Plan and Zoning By-Law
- Town's EAC compiling this information and other resources to make these choices and opportunities easily accessible

4. What is your vision of a Smart Energy Community?

- A regional Smart Energy Community
- Net-zero (or as close to it as possible)
- Local independence and self-sufficiency in both food and energy production
- To eventually get the community to a net zero system using variety of energy efficiencies and infrastructure

5. Biggest take-away from Workshop

- There are more opportunities to increase energy efficiency and use of renewables than we had thought
- Lots of small actions can be taken to become energy smart, not all projects require big capital investment
- There are many opportunities within the community for both action and collaboration
- There are opportunities that are not just within the community but at a regional level as well
- The mapping tool is a great tool to facilitate active participation from multiple parties
- Energy smart can be achieved on a variety of different levels: individual, neighborhood, and municipal. There are so many actions to be taken!

5.0 Summary of Results

5.1. Summary

The Town of Saint Andrews participated in a community energy mapping workshop facilitated by QUEST, as part of the Smart Energy Community Accelerator Program. The workshop engaged a total of 13 diverse stakeholders and staff through various exercises, including map-based exercises using the digital tool, Mural, where participants could identify local assets/strengths, as well as opportunities around energy efficiency, clean energy, transportation, land use and more. These opportunities were denoted on the map and discussed. The map exercise was followed by an action planning round. The process ensured diverse viewpoints could be captured, and helped to establish a vision for a Smart Energy Community. The key findings can be used to inform a Community Energy Plan, and/or pursue specific community energy initiatives.

5.2 Summary of Key Strengths/Things in Place

Through this workshop, a number of local assets and strengths were identified. Here is a list of strengths:

- The town has an engaged and committed group of leaders interested in furthering the planning and action on smart energy initiatives in Saint Andrews
- The mapping exercise illuminated several locations of significance within the community where smart energy activities could be implemented with great value to the community as a whole, such as the transit lines, EV stations, and solar energy upgrades to the Huntsman Marine Science Centre
- Plans for the development of Knowledge Park are underway, and with the information gleaned during this workshop, the community is well-positioned to enhance the energy efficiency, renewable energy or transportation plans for that area before the development plans are finalized

5.3 Opportunities Identified

Through this workshop, a number of opportunities were identified. Here is a list of opportunities, prioritized based on the Action Planning Round. Priorities include:

- The CAO could review this report with the Town Council at the next General Meeting.
- The Town could further explore the actions that came to light during the mapping workshop, particularly heat capture and solar energy opportunities. The Town can incorporate the outcomes of the workshop into the upcoming Town of Saint Andrews Community Energy Plan
- The Town and partners involved can follow the energy decision making hierarchy to determine next actions
- The Town may review policies and ensure/develop alignment to the Town's energy plan (e.g. land use, climate change, etc.)

- The Town could continue to participate in the remaining activities in QUEST's Smart Energy Community Accelerator Program — specifically, the CEP Development and Implementation workshops, the CEP Course for Planners, and any relevant webinars
- The Town may continue building relationships with key partners/stakeholders in the community
- The Town may encourage greener housing, reducing heating/cooling by improved home insulation and optimised new building positioning. This can be done through education campaigns, permit requirements/incentives, or a community efficiency financing program
- The Town can encourage the integration of local, renewable, and conventional energy sources to meet community energy needs. This can include capturing and using waste energy in the community and increased use of solar options and/or wind energy
- The Town may encourage the electrification of transportation (e.g. charging stations), increase options for non-motorized transportation, and promote sharing of transportation (e.g. car share)
- The Town may consider land-use patterns that improve energy efficiency and reduce commuting, e.g. densification of the downtown core, Water Street, and new mixed-use developments
- The Town may create an awareness campaign about their intention to become a greener, more sustainable community. Every resident, business, and the Town itself can play a role in reducing energy consumption. The Town can promote the programs outlined by NB Power and communicate on the subject of sustainability through its website, social media, and newsletter. This can include constant reminders of ways to save energy. People seeing action toward savings will help
- The town can track energy consumption levels and communicate their changes. The more the community is involved and can share their energy-saving actions, the better
- The town can seek financial resources for implementing smart energy action items, including funds to mobilize financing initiatives that will help the community get started

5.4 Next Steps

The report can be used to inform future planning decisions, build on the Climate Change Action Plan/Community Energy Plan, and help spur specific projects/initiatives that the municipality or local stakeholders may wish to undertake.

As part of the NB Smart Energy Community Accelerator Program, QUEST Canada also facilitated CEEP development and implementation workshops with the Town of Saint Andrews. The workshop included an exercise to identify and assign roles to the lead responsible for each potential action, and identify which partners need to be involved. The exercises also created an assignment timeline, a target (e.g. percentage of GHG reduction), and identified whether each action needs funding, a study, or supporting policies.

6.0 Conclusion

This report highlights the consolidated results of the energy mapping exercise for the Town of Saint Andrews, and has identified opportunities for their Community Energy and Emissions Plan, including for energy efficiency, harnessing local energy opportunities, improving land use, transportation, and more. Key findings can help inform your next steps (e.g. creating a Community Energy Plan) and vision for a Smart Energy Community.

QUEST Canada looks forward to continued collaboration with the Town of Saint Andrews as part of the NB Smart Energy Community Accelerator Program. For any further information about this report or the Accelerator Program, please contact us at info@questcanada.org.

7.0 Annexe

7.1 Participant List

Name	Title	Organization
Brent Lockhart	Account Specialist	NB Power
Sara Mudge	Community Energy Specialist	NB Power
Paul Nopper	Clerk	Town of Saint Andrews
Chris Spear	CAO	Town of Saint Andrews
Vivian Peng	Jr. Planner	Southwest New Brunswick Service Commission
Kurt Gumushel	Town Councilor	Town of Saint Andrews
Steve Neil	Town Councilor	Town of Saint Andrews
Marc Blanchard	Town Councilor, EAC Liaison	Town of Saint Andrews
Kalen Mawer	EAC Representative	Environmental Action Committee
Terry Acton	Operations Manager	Town of Saint Andrews
Jessie Davies	EAC Representative	
Lee Penney	GIS & Data Tech	Charlotte Waterways
Helen Gurney-Smith	EAC Representative	Environmental Action Committee