QUEST | Net-Zero Communities Accelerator Program

ENERGY MAPPING EXERCISE FINAL REPORT

February 2024

MUNICIPAL DISTRICT OF ST. STEPHEN

ACKNOWLEDGMENTS

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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 and join the network at questcanada.org.

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1.0 EXECUTIVE SUMMARY

What is this Report About?

The former Town of St. Stephen participated in an Energy Mapping Workshop facilitated by QUEST, as part of the NB Smart Energy Community Accelerator Program. In February 2024, QUEST conducted a review of the energy mapping exercise for the Municipal District of St. Stephen.

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 reducing energy costs and greenhouse gas (GHG) emissions in the community.

Eight participants — representing diverse stakeholder groups including municipal staff, regional service commission, elected officials and utilities — attended the workshop. Presentations were delivered by both NB Power and Liberty Utilities, regarding their respective available programs and services. For the review session a total number of four participants took part.

Who Is it Intended For?

This report is intended to inform the municipal staff, councillors, stakeholders and the broader public

about:

- Local strengths, achievements and impacts
- Opportunities to improve energy efficiency, integrate clean energy and improve transport as part of a Community Energy and Emissions Plan (CEEP)
- Targeting of measures and partnership facilitation

High Level Summary of Key Findings

Based on the results of the pre-survey and the workshop, the Municipal District of St. Stephen has the following opportunities to advance community energy and emissions reduction initiatives.

Table 1: Description of improvement and opportunities

Areas	Key Areas for Improvement / Opportunities:
Energy Efficiency	• Energy efficiency retrofits for • Buildings such as the educational building, buildings in the industrial park, the fire hall and other service buildings belonging to the municipality. • Commercial buildings in the industrial park

	• The fire Hall in Oak Bay, and the Oak Bay community hall • Various houses that are from the 1950s-80s • Various old farm houses • Buildings that were identified for For net-zero: • The Garcelon Civic center building
Waste and renewable heat	Sources: • Auraco (Flakeboard Co.) • The Garcelon Civic Centre (GCC) • Ganong Factory • Water Treatment Plant End Uses: • The industrial park area and its facilities • Building in the immediate vicinity of GCC • The Privately owned Cannabis building and the Government building near Progress Drive
Renewable power	Sources: • Multiple land sites including green space suitable for ground mount solar and/or wind power generation • Wastewater facility has potential for a micro-hydro generator • Multiple municipal buildings identified with rooftop solar potential
Land use	• The industrial park redevelopment has potential for mixed-use planning but requires zoning changes • The north end of town off King Street, by the commercial district and high school, could undergo mixed-use development and densification • The areas near Pleasant Street, Progress drive and Boundary Street could be potential sites for mixed use development.
Transportation	• The main shopping district has potential for an active transportation network parallel to King Street, connecting shopping to Riverfront Trail • Milltown is a transportation development opportunity, as it is very vehicle focused • Multiple location for EV charging stations • The St. Stephen Waterfront Trail is a key destination of active transportation

Energy networks	• The industrial park region (renewable and waste heat) • The area surrounding the wastewater treatment facility is a renewable energy network opportunity • The commercial/shopping district has geothermal heat source potential • Industrial building/GCC region around Riverfront Trail

2.0 COMMUNITY PROFILE

Formally known as the Town of St. Stephen, the Municipal District of St. Stephen is located on the St. Croix River, opposite Calais, Maine, and holds a population of 8,100 residents. St. Stephen is relatively small, situated in close proximity to the U.S. border, and is also close to Saint John and Fredericton. The town is renowned as Canada's Chocolate Town due to its chocolate heritage from the Ganong Brothers, who began a grocery store in 1873 that eventually evolved into a chocolate corporation. Besides its urban areas, St. Stephen is surrounded by endless natural wonders, such as the Elm Street Nature Park, featuring approximately 60 acres of wooded land perfect for short hikes, dog walking, and cross-country skiing in the winter.

The local climate is cool and temperate, with significant rainfall (1199 mm) throughout the year. Seasonal flood risk areas have been identified along the waterfront. The town does not have a Community Energy Plan (CEP) and the NB SECA Program will allow the community to both develop and lay the groundwork for CEP implementation.

3.0 COMMUNITY ENERGY AND EMISSIONS MAP EXERCISE RESULTS

Map Exercise Results

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.

Overview

The Map Exercise engaged multiple stakeholders, using a map, 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:

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:**

- Buildings for improving energy efficiency:
  a) The industrial park area around Church Street and Queensway Way
  b) The buildings around the GCC, including the community pool, library, and municipal building
  c) The fire hall in Union Street
  d) The Public Works building in Union Street
  e) The Border Arena
  f) Various building services facilities
  g) The hospital buildings
  h) The Maxwell Crossing Pump House (External to the boundaries of the map)
  i) The RCMP station
  j) The fire Hall in Oak Bay, and the Oak Bay community hall
  k) Various houses that are from the 1950s to 80s
  l) Various old farm houses

- Buildings that were identified for For net-zero
  m) The Garcelon Civic center building
- No potential net-zero sites have been identified

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 Auraco site to the east of Church Street could be a waste heat source
b) The GCC buildings could be a waste heat source from the ice plant
c) The Ganong Factory near Chocolate Drive could be a potential waste heat source
d) The town's hospital buildings could be potential waste heat sources
e) The wastewater treatment facility could be a potential waste heat source

f) The Privately owned Cannabis building near Progress Drive could undergo clean heat conversion
g) The Government building near Progress Drive could undergo clean heat conversion
h) No heat conversion sites have been identified

3. Renewable Power

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

a) The open land to the east of St. Stephen Drive East could be a potential site for wind and/or solar power generation
b) The open land to the south of St. Stephen Drive West could be a potential site for wind and/or solar power generation
c) The wastewater treatment facility could be a potential micro-hydro site for clean power conversion. It could be feasible to harness the potential energy from water flow over the lagoon
d) The GCC building has a flat roof and could be a good location for rooftop solar panels
e) The Civic Centre could be a site for rooftop solar panels
f) The old hydro dam /transmission infrastructure could be a potential solar site. Only municipal land is a ballfield
g) The municipal land next to the airport could be a potential solar site
h) An area siting for utility scale solar, on municipal land
i) The municipal land, near transmission(near the reservoir road) could be a potential solar site
j) The municipal land near Progress Drive could be a potential solar site
k) The municipal green space or the cleared land area near the Energie NB Power operations center office could be a potential solar site

4. Land Use

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

a) The educational building area east of King Street is a mixed-use site for employment and schools. Could continue the mixed-use designation and densification by adding residential developments
b) The industrial park area is expected to expand and therefore could be a potential site for mixed-use development and densification (such as housing projects) if the zoning is changed
c) The area surrounding Young Street and William Street has high walkability and proximity to amenities and therefore could be a potential site for densification efforts.
d) The area near Pleasant Street could be a potential site for mixed use development.
e) The area near Progress Drive could be a potential site for mixed use development.
f) The area near Boundary Street could be a potential site for mixed use development.

5. Transportation

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

a) The main shopping district around the area of Young Street has potential for EV charging stations and an active transportation network connecting Riverfront Trail all the way up to Kings court, ideally parallel to King Street
b) The industrial park area near Churchill Street is a key destination for the town and has potential for a new EV station
c) The Post Office Park area is a key destination in the town and a potential site for a connected transportation network
d) Milltown is an opportunity area that could benefit from active transportation infrastructure
e) A location near newly paved walking trail at waterfront has potential for a new EV station
f) The existing EV charging station at the Civic Centre is a Key transportation destination and it has three outlets (L2, L3) and an existing one at five Kings.
g) A location near the superstore has potential for a new EV charging station.
h) A location near the Public Works Garage closer to Union Street has potential for a new EV charging station.
i) A newly paved trail extending 1.4 km, known as the St. Stephen Waterfront Trail, has recently been completed near the waterfront
j) A location near Oak Bay beach has potential for a new EV charging station.

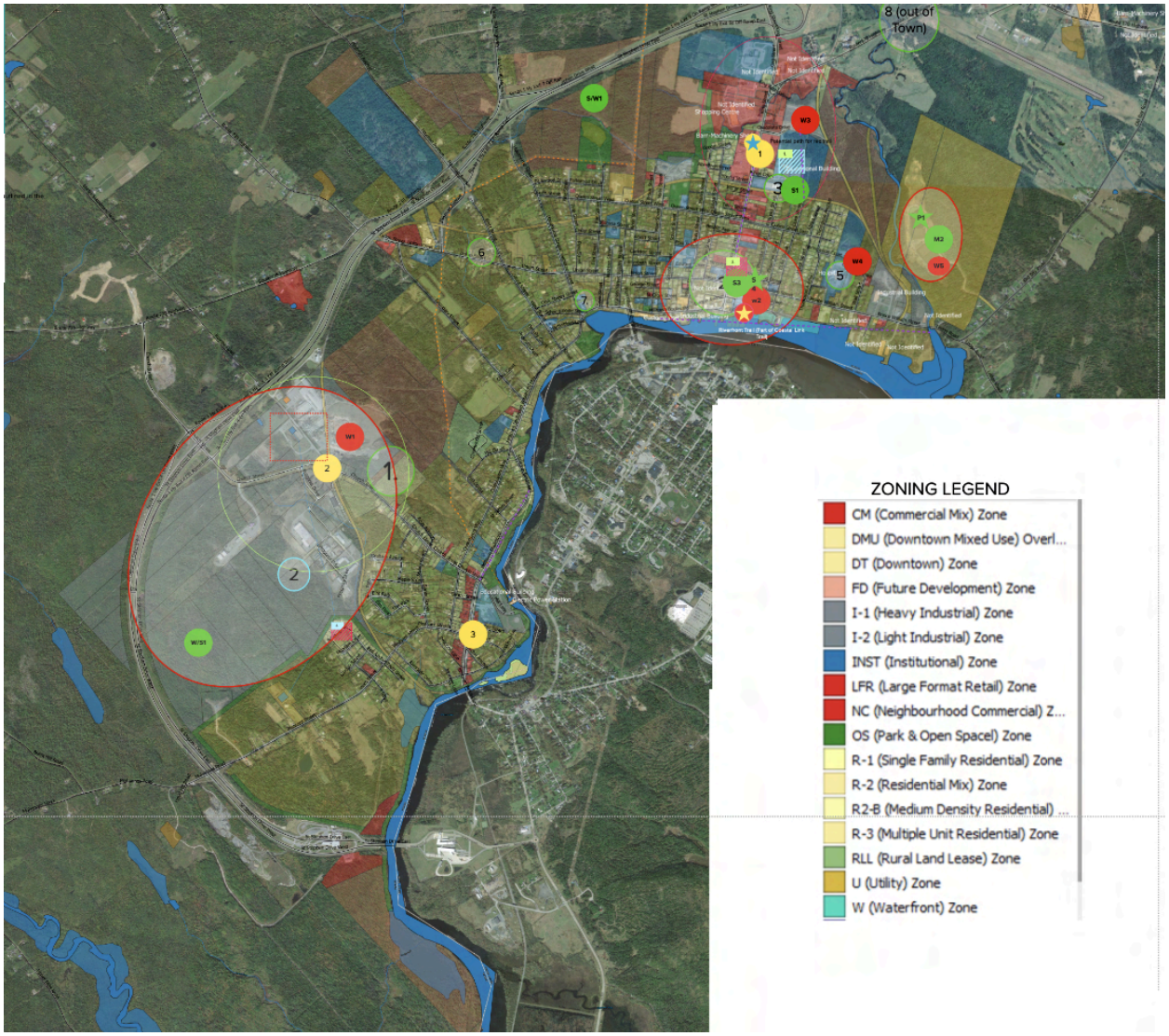
6. Smart Energy Networks

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

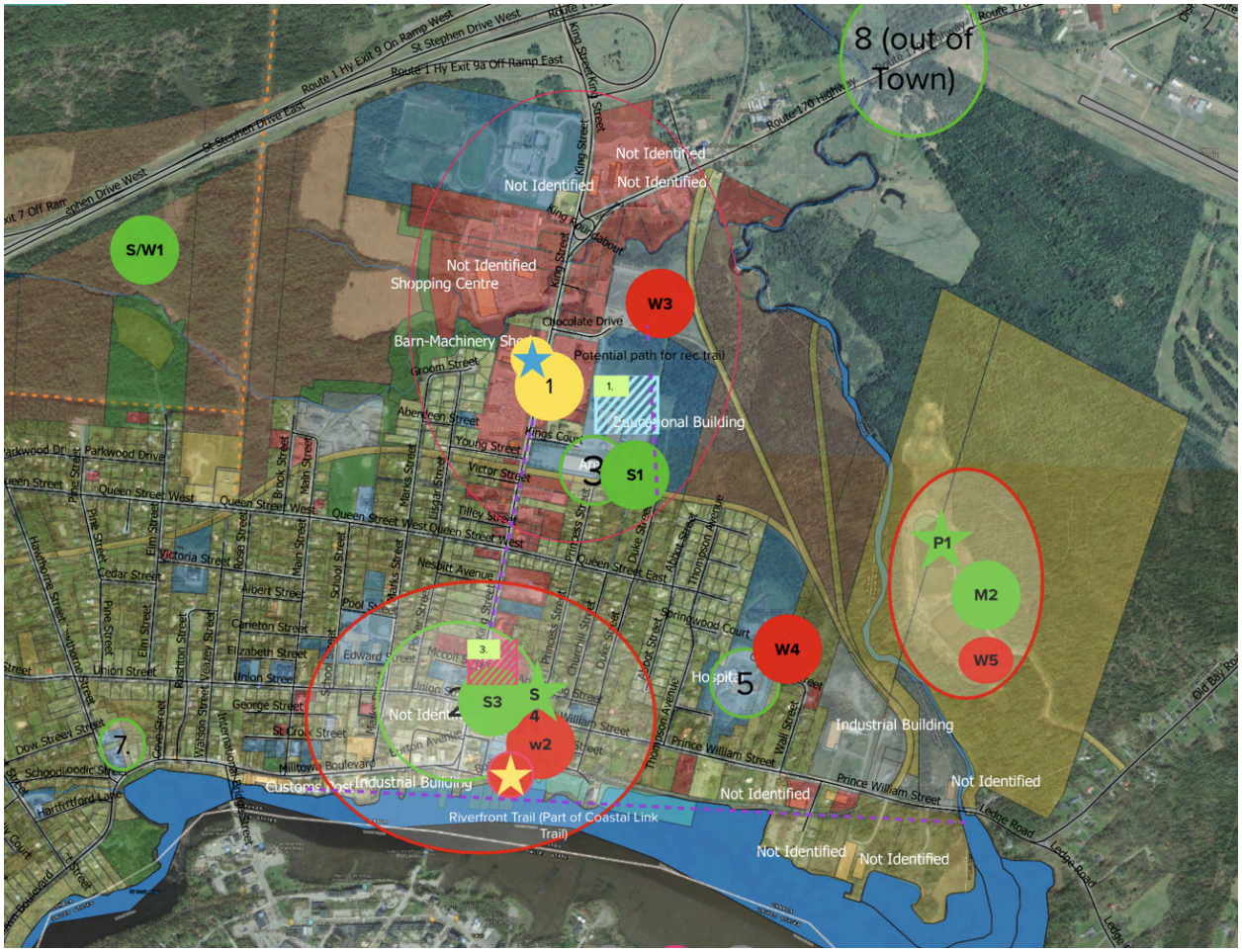
a) The area around the industrial park could be a potential site where both waste heat is generated, and deploying other renewables is a possibility
b) The GCC area north of Riverfront Trail
c) The area around the lagoon/wastewater treatment facility
d) The shopping center district surrounding Young Street and the Educational Building

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

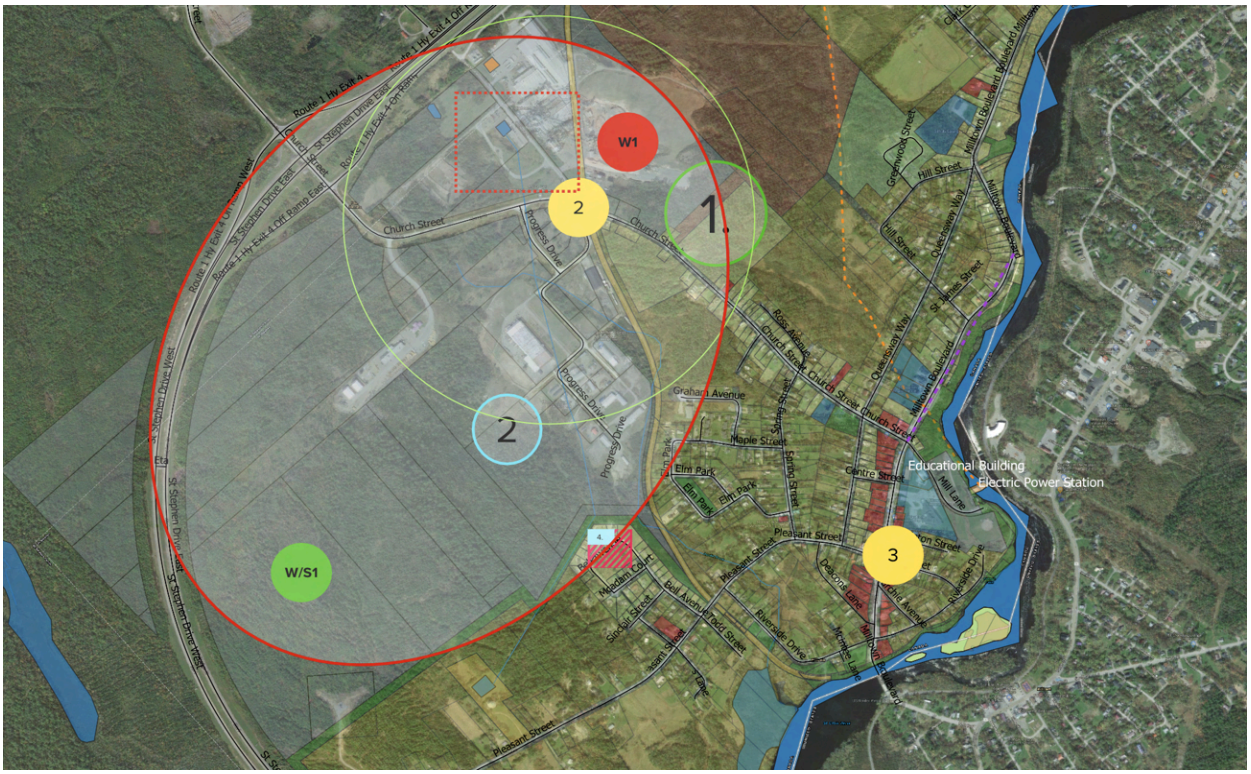
Map Images 1 (2021)



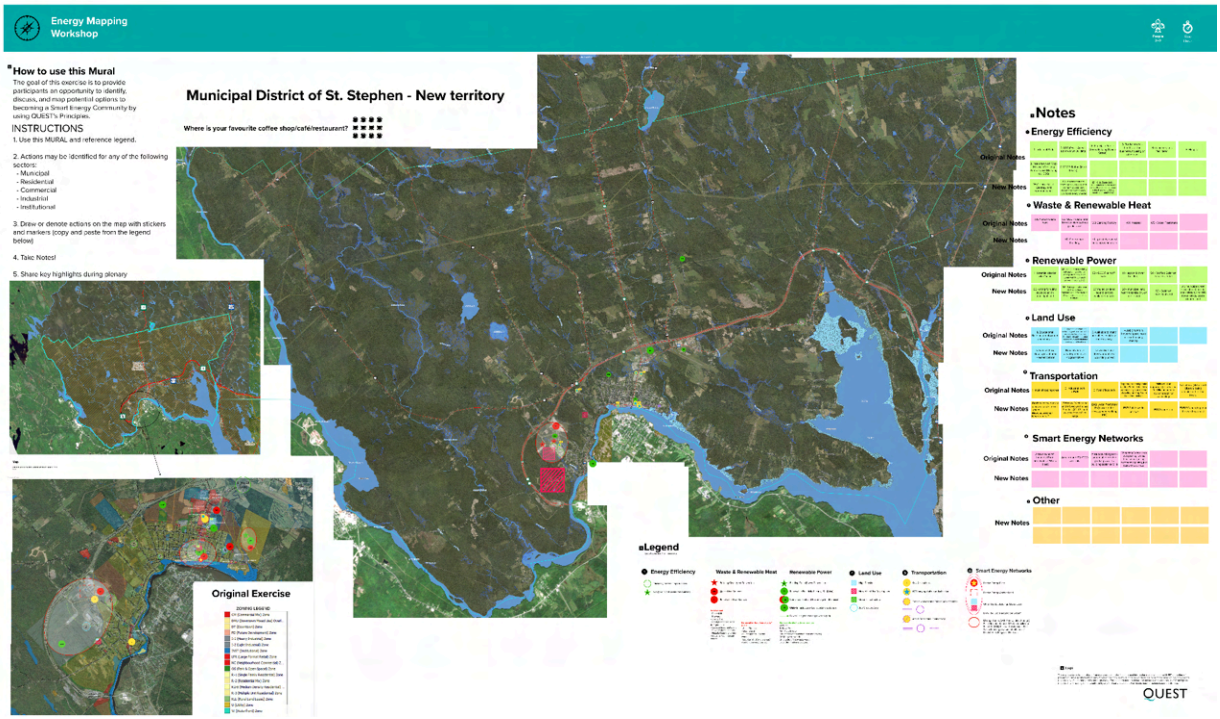
Map Images 2 (2021)



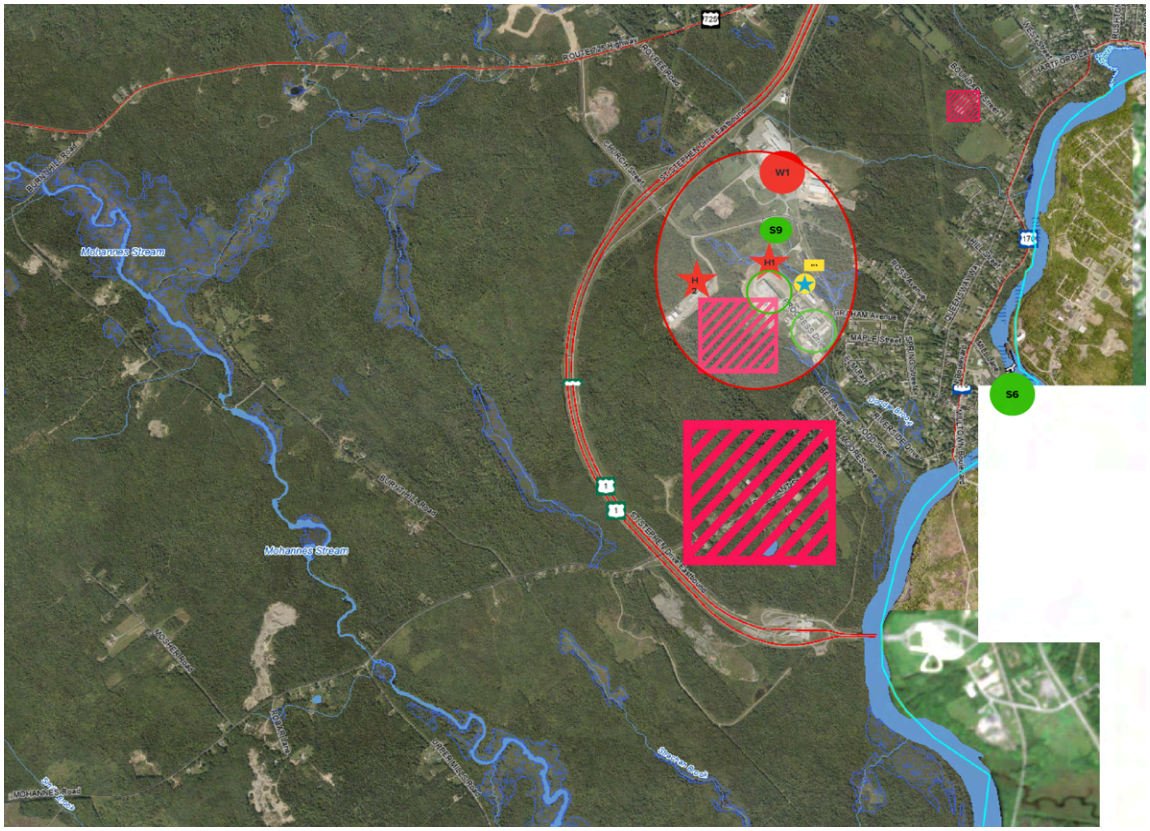
Map Images 3 (2021)



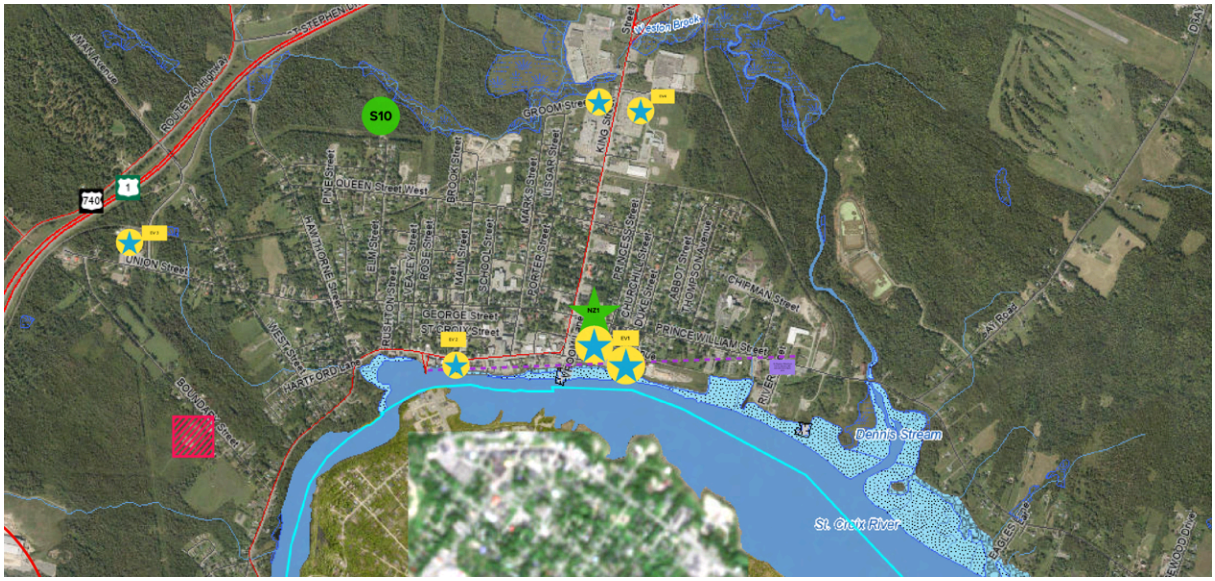
Map Images 4 (2024)



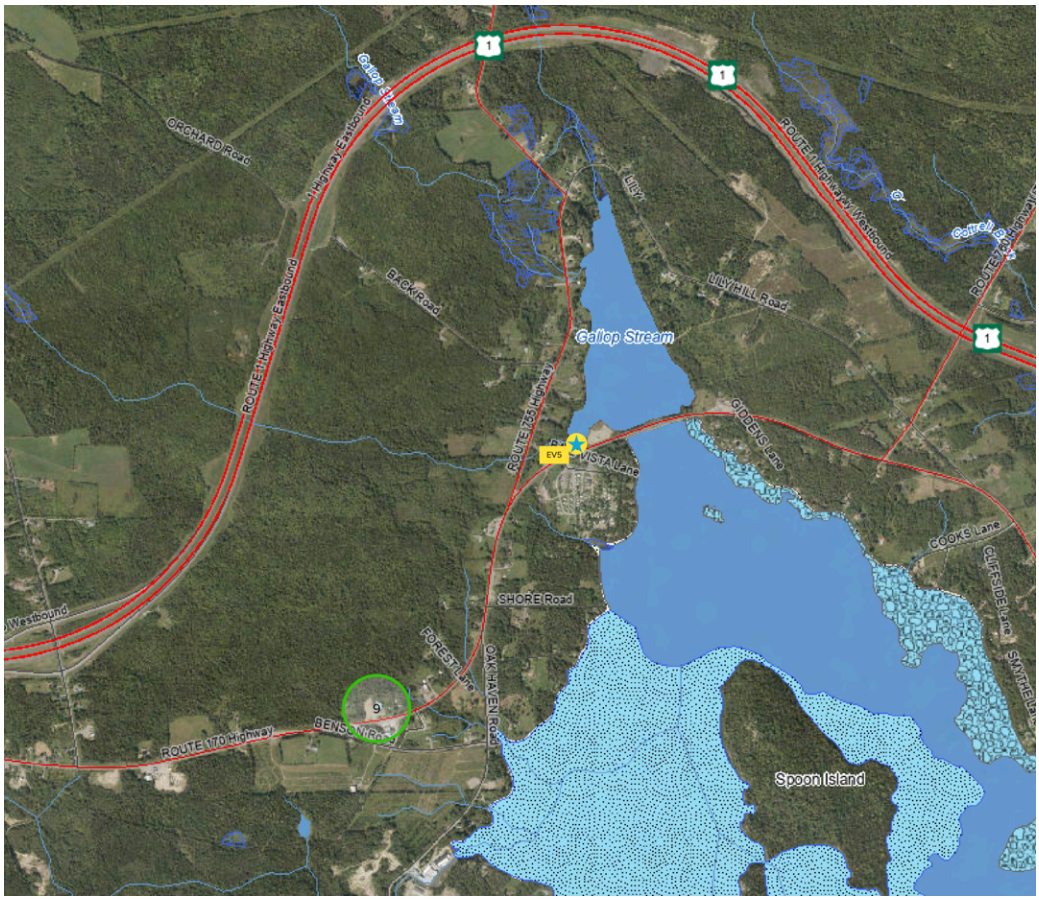
Map Images 5 (2024)



Map Images 6 (2024)



Map Images 7 (2024)



Map Images 8 (2024)

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

Goal

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

Overview

Participants were asked a series of questions. For each question, they wrote their answers on a sticky-note. These sticky-notes were arranged onto panels by theme. The responses are summarized in the sections below.

Summary of Results

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

- Eagerness to collaborate and work towards the common good of the community
- The community has many points of energy input and output that present areas of opportunity
- The community is taking the right steps to move forward with smart energy actions

- The community has a diverse mix of residential, commercial, and industrial members that is valuable to this process

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

- The community energy planning process needs more input from residents
- A comprehensive active transportation network (cycling, walking, and electric scooters) to reduce single-vehicle traffic in busy areas
- A need to invest in the town's municipal buildings
- The community has multiple opportunities for small-scale renewable generation
- The Town has a significant opportunity to work with and engage diverse stakeholders on sustainable energy solutions
- There are many geographical synergies

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

- Try to identify potential cycle routes on my own daily commute
- Continue to show the community what is and isn't working, take leadership on steering these changes
- Work together on engaging more residents and other stakeholders in energy work
- Continue to find more ways for energy sustainability
- The town should highlight the energy efficiency of the GCC, as most residents may not know (share this as a local success story)

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

- Outputs connected to inputs
- Full harnessing of multiple industrial outputs
- One where I don't have to drive to the grocery store
- More sidewalks and bike paths (Increased active transportation options)
- Long-term sustainability
- One where natural resources are taken advantage of in a sustainable way

5. Biggest takeaway from the Workshop

- Seeing the potential of the Smart Energy Community here in St. Stephen
- The various resources available to the community for energy efficiency upgrades
- Sustainable energy initiatives have long-lasting benefits to the community

5.0 SUMMARY OF RESULTS

5.1. Summary

The Town of St. Stephen participated in a community energy mapping workshop facilitated by QUEST, as part of the Smart Energy Community Accelerator Program. In February 2024, QUEST conducted a review of the energy mapping exercise for the Municipal District of St. Stephen.The workshop engaged a total of eight diverse stakeholders and staff through various exercises, including a map-based exercise 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 mapping 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 and Things in Place

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

- The municipality has an engaged and committed group of leaders interested in furthering the planning and action on smart energy initiatives in St. Stephen
- 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 active transit lines, EV stations, and solar energy upgrades to various sites in the main shopping district
- Plans for the development of the industrial park are underway, and with the information gleaned during this workshop, the community is well positioned to enhance the energy efficiency and densification plans for that area through zoning changes that will allow mixed-use development

5.3. Opportunities Identified

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

- The mapping workshop (this report) can be reviewed by the CAO with the Town Council at the next general meeting
- The municipal district should further explore the actions that came to light during the mapping workshop, particularly heat capture and solar energy opportunities. The municipality can incorporate the outcomes of the workshop into the upcoming Municipal District of St. Stephen Community Energy Plan
- The municipal district and partners involved can follow the energy decision-making hierarchy to determine next actions

- The municipal district can review policies and ensure/develop alignment to the energy plan (e.g. land use, climate change, etc.)
- Themunicipal district will 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 municipal district may continue building relationships with key partners/stakeholders
- The municipal district may encourage greener housing: reduced heating/cooling by improved home insulation and optimized new building positioning. This can be done through education campaigns, permit requirements/incentives, or a community efficiency financing program
- The municipal district 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 the increased use of solar options and/or wind energy
- The municipal district may encourage electrification of transportation (e.g. charging stations), increase options for non-motorized transportation, and promote sharing of transportation (e.g. car share)
- The municipal district may consider land-use patterns that improve energy efficiency and reduce commuting, e.g. densification of the area surrounding Riverfront Trail and incentivizing mixed-use development in the industrial park area
- The municipal district 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 municipal district 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 municipal district 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 Municipal District of St. Stephen. 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 Municipal District of St. Stephen, and has identified opportunities for their Community Energy 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 looks forward to continued collaboration with the Municipal District of St. Stephen. For any further information about this report, please contact us at info@questcanada.org.

7.0 ANNEXES

List of Participants
Town of St. Stephen 2021

Name	Title	Organization
Jason Walsh	Territory Manager	Liberty Utilities
Ghislaine Wheaton	Deputy Mayor	Town of St. Stephen
Jeremy McShane	Operations/Maintenance Coordinator	Town of St. Stephen
Kev Sumner	Director of Community Services	Town of St. Stephen
Sara Mudge	Community Energy Specialist	NB Power
Rory Pickard	Technical Service Lead	Dillon Consulting
Zen Hiew	Business Development Manager	Liberty Utilities
Alexander Gopen	Planner	Southwest New Brunswick Service Commission

List of Participants-Review Session
Municipal District of St. Stephen February , 2024

Name	Organization
Jeremy McShane	Facility Maintenance Coordinator, Municipal District of St. Stephen
Eddie Oldfield	Senior Lead, Projects, QUEST Canada
Norma Panetta	Lead, Projects, QUEST Canada
Malsi Angekumbura	Lead, Projects, QUEST Canada