Supplementary Material filed by

Andrea Battison

In the matter of Andrea Battison v. City of Charlottetown

550 University Avenue

(Appeal #LA20003)

Submitted by:

Andrea Battison

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INDEX

PEI

Charlottetown looking at ways to improve city's east end

The city is revisiting the Eastern Gateway development plan which was developed in 2011

Sarah MacMillan · CBC News · Posted: Apr 06, 2017 7:07 AM AT | Last Updated: April 6, 2017

About 40 people showed up to a public meeting to find out details of the Eastern Gateway Waterfront Master Plan. (Sarah MacMillan/CBC)

The City of Charlottetown is looking at how to develop the east end of the city, close to the waterfront.

The city is revisiting a plan that was developed six years ago by consulting firm Urban Strategies. The plan, called the Eastern Gateway Waterfront Master Plan, focuses on the area bordered by Weymouth Street, Grafton Street, Kensington Road, Exhibition Drive, Riverside Drive, and Water Street.

While the plan was done in 2011 it was never developed into policy. Now, Urban Strategies has returned to Charlottetown to re-examine the plan, and work with the city to put it into policy. Managing partner George Dark led a public information session Wednesday evening where he outlined the main ideas in the plan.

'Aspirational vision'

Dark described the plan as an 'aspirational vision' for the city. He noted that Victoria Park in the west end, and the downtown core in the centre are very pedestrian friendly, and popular. He said the east end, which is more industrial, does not make the best use of space.

"This is the east side's chance to catch up with all that," said Dark. "So that if I'm walking down Water Street, I don't stop at the pharmacy any more and turn around because I just don't think I have any place to go, but I actually keep going."

George Dark said the plan is an 'aspirational vision' for the city. (Sarah MacMillan/CBC)

Key components of the plan include creating more green space; creating bicycle paths; and realigning Water Street, which would allow for public waterfront access.

Dark noted that there are a number of industrial businesses in the area, and the plan is not "an attempt to make people go away."

Facilities like the Maritime Electric station and the sewage treatment plant have been built into the plan, along with ideas for what could happen if things change in years to come.

Positive feedback

About 40 people attended the public meeting to hear about the plan. Cassandra Goodwin said she thinks the plan is a "step in the right direction." She said she rarely goes to that area of the

city. While she often walks along the waterfront, she usually turns back just past Cumberland Street.

Cassandra Goodwin said she was happy to see a focus on green space and bike paths in the plan. (Sarah MacMillan/CBC)

She said she would likely venture into the area more if aspects of the plan were implemented.

"I'm excited that there might be more focus on bike lanes, or safe places to bike. And also safer ways to access the bridge if you're walking or biking across the Hillsborough bridge. I think that's something really important to think about going forward," said Goodwin.

Next steps

Dark said over the next two months, his firm will do further consultation, and look at any updates that should be added to the plan.

The firm will then create a policy document to bring to council. Once accepted by council, it would become part of the official city plan, and would help to inform development decisions for years to come.

"I think the important thing now, whether it's one year or two years or five years is to get it into public policy, and that way you can actually use it to guide how this area can grow in the future," said Dark.

Charlottetown residents largely pleased with Eastern Gateway waterfront concept

The Guardian
Published: Jun 20, 2018 at 6:34 p.m.
Updated: Oct 31, 2018 at 10:15 a.m.

Charlottetown resident Andrea Battison asks a question during a public meeting on the Eastern Gateway Waterfront Master Plan at the Charlottetown Rodd Tuesday night. Battison told urban planner George Dark she was pleased to hear that he would rather see the Holland College parking lot eventually re-purposed. - Mitch MacDonald

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CHARLOTTETOWN, P.E.I. - A long-term plan for the eastern entrance to Charlottetown is a promising idea as long as future city councils stick with the vision, say some residents.

“The expression is, if you don’t know where you’re going, any road will take you there,” said George MacDonald, a former mayor of Charlottetown, was one of about 100 people who attended a meeting for public input on the Eastern Gateway waterfront master plan at the Rodd Charlottetown Tuesday.

“I think this gives us some idea of where we’re going, and the only concern I would have is that hopefully, when something is in place, it won’t change. Because if some developer has an idea that will benefit him or her but no one else, and the council or CADC of the day says ‘yeah, OK, we’ll change it,’ then the vision is gone.”

MacDonald said he saw the vision more as a “Phase 2” continuation of the city’s boardwalk, Confederation Landing and the Charlottetown Event Grounds.

He said those pieces came together from an overall vision made years before and that residents were fortunate when elected officials and the Charlottetown Area Development Corporation followed it.

Residents have until noon Tuesday, June 26, to submit suggestions to Charlottetown City Hall to help shape the Eastern Gateway Waterfront Master Plan. The city's planning board will meet on July 3 to decide on a recommendation for council, which will then vote on the plan July 9.

Many residents at the meeting praised the plan in general, while offering some minor changes.

Poll: Do you think a beach at the foot of the Charlottetown approach to the Hillsborough Bridge is a good idea?

Randy Campbell says he loves much of the plan, but he believes there should be a policy empowering council to relocate industrial users that don't need to be on the waterfront.

 George Dark.

"We're really handcuffing council, and I think it's going to prevent them from doing some of the important relocation that needs to happen (eventually)," he said.
Urban planner George Dark says it would be better to try and relocate those users "on a partnership basis (rather) than with a stick."

"There is a natural trend for these things to resolve themselves, so we're not trying to move these large industrial players out before their time," said Dark. "We're trying to change both the landscape and the nature of the city. One of the things that happens when you do that is you give strong value to a place and it actually makes it easier for them to leave because sometimes their land is worth a lot."

Resident Andrea Battison asked whether the plan could see the Holland College parking lot re-purposed.

It was a suggestion Dark appeared to agree with, stating that a waterfront is not the best place for a parking lot in a city "run by tourism."

"There is no guide to the best parking lot to go visit," he said. "It might not be the first thing that you do, but I would prefer to see this land, rather than for the storage of cars, be put into a legacy format."

PEI

Big crowd weighs in on regulating Charlottetown short-term rentals

Public meeting is a part of the process of writing a new bylaw to regulate the units

Natalia Goodwin · CBC News · Posted: Jun 20, 2019 7:59 AM AT | Last Updated: June 20, 2019

A large crowd came out Wednesday night to have their voices heard. (Natalia Goodwin/CBC)

The City of Charlottetown will have a lot to consider when putting together the new bylaw to regulate short-term rentals.

A packed room spent hours Wednesday night giving feedback to council on what they would like to see happen.

The majority of those favouring regulating the units listed on sites such as Airbnb and VRBO wanted an owner-occupied model. That would mean in order to rent out on one of those sites the unit would also have to be your primary residence.

"To me it's because Airbnb originally billed itself as a sharing platform, and I personally know low-income homeowners who are able to support themselves by renting out rooms in their house to tourists in the summer. And I think that's really valuable," said Gabrielle Ayles.

- Short-term rental bylaw process being closely watched in Charlottetown
- Charlottetown short-term rental survey missing key option, says advocate

"The problem that I see with it is we have people who have taken advantage of the lack of regulatory framework around Airbnbs to operate essentially hotels. It's people who have multiple properties who are taking those properties out of the long-term housing supply."

Enforcement important

Others thought there could be a multi-pronged approach.

- City of Charlottetown wants short-term rentals defined as tourism accommodations
- 'Tent town' draws attention to Island's affordable housing crisis

"Perhaps special zoning on short term rentals, increased taxation. Maybe we can link the number of allowable short-term rentals in the city to the amount of housing supply. So we don't have really, really low vacancy," said Ryan Cooke.

To many others, like Ainsley Kendrick, a member of of the P.E.I. fight for affordable housing group, policing is just as important as regulation.

Gabrielle Ayles, like many in the crowd, was for owner occupied regulations. (Natalia Goodwin/CBC)

"Whatever it is that you decide, put into your plan how that is going to be enforced and act upon that. Don't slap something on a piece of paper and say 'Oh, we did this great thing,'" she said

Bed and breakfasts not happy

Operators of other types of tourism accommodations also shared their experience on how the recent boom of the rentals has taken a toll on their bottom line and their frustration with the lack of rules for the rentals to follow.

- If you're renting out on Airbnb, you should check your insurance
- Vacation rental operators get summer reprieve on Charlottetown tourism levy

"We're not even getting phone calls ... all of our guests are going elsewhere," said Stacey O'Neill, who owns Dawson House Bed and Breakfast.

"We're doing all the things that we're supposed to do and are happy to do. But then you know, like I say, I'm surrounded by Airbnbs and they don't have any of these things. There's brick buildings, there's no fire escapes, there's nothing,"

Operators speak out

Several short-term rental operators were at the meeting to speak out in support of the current, largely unregulated, system.

Tian Wigmore and his wife Beth Lassaline live in Ontario but rent out their home on P.E.I. short-term. They said they feel for anyone unable to find housing, but think they have a right to do what they want with their property.

"We rely on that income stream in order to maintain our house and hopefully move back here as soon as possible," said Wigmore.

"I really feel that the access to affordable housing and Airbnb are two separate issues," Lassaline added.

"Affordable housing is an amazing social issue that as a community we should all rally behind, but I don't think it needs to come at the expense of Airbnb home owners."

Keir Lowther owns four properties that he rents short-term, and says he is filling a gap in the market. (Natalia Goodwin/CBC)

She said her Charlottetown home is an important investment for her.

"I don't think it's my responsibility to provide that as an affordable home location for people," she said.

Keir Lowther owns four properties in the city that he rents out and argued short-term rentals provide a needed service in the city.

"It's not the short term, it's the medium term that's such a gap in the market," said Lowther.

"It's people buying houses or building houses, needing accommodations for eight months as they build. We have new immigrants to the community … who've taken our places for the term that they set, not a term that I set as a landlord."

City staff will take the feedback from the meeting and the results of a survey that was done by the city and begin to draft a bylaw. That bylaw will go back to public consultations, and the hope is it will be ready for council to vote on by the fall.

Charlottetown's planning board sends fractious issue over short-term rental properties to public meeting

Dave Stewart (dave.stewart@theguardian.pe.ca)
Published: Mar 16 at 6:45 a.m.
Updated: Mar 16 at 6:51 a.m.

Robert Zilke, an urban planner with the City of Charlottetown, gave a presentation on short-term rental properties to the city's planning board on Friday, essentially recapping the same presentation he made to council on Monday. The city is proposing regulations that will go to a public meeting, tentatively scheduled for the end of the month. - Dave Stewart

CHARLOTTETOWN, P.E.I. —

Charlottetown's planning board gave the green light Friday to sending a proposal to regulate short-term rental (STR) properties to a public meeting.

Robert Zilke, an urban planner with the City of Charlottetown, gave a presentation to the board on Friday which, essentially, was a recap of the presentation he made to city council earlier this week.

Zilke and his colleagues in the planning department have been working with McGill University professor David Wachsmuth over the past year to come up with a balanced plan.

"Essentially, to sum up, the proposed framework is to allow for residential short-term rentals to be located in principal resident units and that's directed to residential zones,'' Zilke told The Guardian.

"That's common practice (as to) how other municipalities across the country have done it.''

Zilke added that his department is also recommending that a bylaw direct commercial short-term rental properties to zones that already permit things like a hotel or hostel.

"Essentially, to sum up, the proposed framework is to allow for residential short-term rentals to be located in principal resident units and that's directed to residential zones ... that's common practice (as to) how other municipalities across the country have done it.''

The board held its meeting inside council chambers. The gallery was packed and the opinion divided.

Brian Gillis, a volunteer with Habitat for Humanity, said these short-term rental properties are making it very difficult for people to find affordable places to live.

“I am concerned, very concerned that the people with the most to risk in this discussion are not present; they don’t have a voice,’’ said Gillis, who is also a former architect and commercial developer.

“I hear the chairman of planning spending a lot of time speaking about what is going to impact the existing illegal operators in short-term rentals. The voice that’s missing is the people who are homeless, evicted (and) unable to get fair rent because we’ve moved the bar so far away from where it should be.’’

Gillis said he can point to at least six homes in his neighbourhood that have been taken out of the market, which are now being run as commercial short-term rental properties.

“They’re collecting premium rents on short-term occupancy and they’re changing the characteristics of the neighbourhood so that’s one injustice. But, more importantly, you’re taking a unit out of the market at the higher end (and) it puts pressure that spirals downward that affects all of the houses.’’

Recommendations from Charlottetown’s planning department on regulating short-term rental (STR) properties:

- Enacting a short-term rental licensing bylaw to govern the activities of short-term rental platforms, operators/hosts.
- Allow for a grace period (the 2020 season) to provide a reasonable amount of time for operator to be educated on the proposed regulations and licensing requirements.
- Publish a public registry of licensed STRs and an STR education section for residents on the Charlottetown.ca website.
- Establish cost recovery through a combination of fees and Tourism Association Levy (TAL) revenue.
- Establish a licensing framework to regulate STRs.
- Provide staff with the direction to hire a third-party monitoring tool to track and provide tools to staff to assist with obtaining compliance with the regulatory framework adopted by council.
- More information on the city’s proposal for STRs is available on its website.

However, Steve Barber, who owns multiple short-term rental properties, said they’re being unfairly blamed for the housing crisis in the city.

“I’ve invested hundreds of thousands of dollars into my properties. I cannot return the properties to affordable housing. I’m sure everybody on the STR side are not able to rent their newly renovated places out for $800 a month," he said.

"I do sympathize with anybody who needs a place to live (but) it seems to me that, perhaps, we’re scapegoating Airbnb and short-term rentals as the root of the problem in Charlottetown where, as operators of legitimate businesses, because we’re paying taxes and we ought to be certified by the province in the first place ... now, all of a sudden it’s going to be taken out from under us possibly (with STR regulations).’’

Barber said developers have been responding to the housing crisis with new builds.

“On the real estate side of things, I feel in the next year, year and a half, there is going to be an over-abundance of empty places.’’

Barber said in today’s tourism market, travellers are looking for Airbnbs and short-term rentals.

“When I travel with a group, I don’t want to stay in a hotel room. You want to have a house. This is the way the world is changing. This is Charlottetown and we are a tourist destination.’’

Council will meet on Monday where it is expected it will formally send the issue to a public meeting, tentatively scheduled for Tuesday, March 31, depending on the situation with the coronavirus pandemic.

Proposed nine-storey UPEI residence going to public meeting, date to be determined

Dave Stewart
Published: Mar 18 at 11:22 a.m.

Jackie Podger, vice-president of administration and finance at UPEI, says the university hopes to break ground on a $60-million, nine-storey student residence in the spring. It's expected to be ready in time for the 2023 Canada Winter Games. Construction requires a zoning change so Charlottetown city council is sending the issue to a public meeting on March 24. - Contributed

CHARLOTTETOWN, P.E.I. —

UPEI hopes to break ground on a new nine-storey, $60-million student residence this spring, says Jackie Podger, vice-president of administration and finance for the university.

However, the public is going to have input first.

Charlottetown city council passed a resolution at its regular public meeting last Monday to send UPEI's request for a site-specific exemption in the institutional zone of the zoning and development bylaw to a public meeting.

That is supposed to happen on Tuesday, March 24, in the Georgian Ballroom of the Rodd Charlottetown Hotel, beginning at 7 p.m. However, while the city hasn't postponed the meeting yet, people are advised to check as the date nears based on current restrictions around the coronavirus outbreak.

The new student residence will include 260 beds, as well as classroom space and a 400-seat theatre. The building's roof would be stepped, a type of design meant to disguise the scale of a building.

UPEI currently has 420 beds for students, so this project would see residence capacity increase by 50 per cent.

"The students will fill it from September to April, and we do have summer programs so students will (also) occupy the space in the summer,'' Podger said.

Any available rooms not taken up by students in the summer months would be available for night-time rentals.

"We want to increase our conferencing business, so that will be helpful as well,'' she said, referring to summer rentals.

The following is information on a proposed building at UPEI:

- Asking City of Charlottetown for a site-specific exemption in the institutional zone of the zoning and development bylaw as it pertains to 55 University Ave.
- Proposing nine-storey student residence
- Would include 260 beds, classroom space and a 400-seat theatre
- A public meeting is currently scheduled to be held Tuesday, March 24 at the Rodd Charlottetown Hotel at 7 p.m. but those interested are advised to check ahead due to the situation with restrictions around the coronavirus.

Podger said any revenue generated from summer rentals goes back into UPEI's budget, first to cover costs such as maintenance and then into student programs.

The residence, which will measure 184,000 square feet, will be located on the vacant field between University Avenue and the Andrew Hall student residence.

The project is expected to be completed by 2022 in advance of the 2023 Canada Winter Games being hosted by P.E.I. This will complete UPEI's transformation to the athletes' village where competitors from across the nation will take up temporary residence for the duration of the Games, after which UPEI students can begin moving in.

The building will also ease the shortage of student housing in Charlottetown.

"This is much needed. We want to make sure it's going to try and help meet the needs of student housing, absolutely.''

Podger said the building does not have a name yet, but the university would love to provide a naming opportunity by having a donor step up.

"It's probably going to be our largest building, if not the largest, and it's in a very high profile place.''

PEI

How Charlottetown will hold in-person public meetings under COVID-19 restrictions

Public meetings that might draw larger crowds on hold for the time being.

Travis Kingdon · CBC News · Posted: Jul 01, 2020 8:00 AM AT | Last Updated: July 1

The June 30 meeting was the first one held under the new public health measures. (Travis Kingdon/CBC)

The city of Charlottetown has returned to hosting public meetings, but many changes have been made to adhere to the public health restrictions due to COVID-19.

Hosted at the Rodd Royalty in Charlottetown, Charlottetown City Council held it's first public meeting in months Tuesday. The meeting was to discuss the rezoning of land on Sherwood Road and proposed amendments to the zoning and development by-law.

It's the city's first meeting under Phase 4 in the province, where 50 people are allowed to be at organized gatherings, so long as social distancing is adhered to.

"Returning back to a sense of normalcy, certainly, it feels good," said Greg Rivard, chair of planning and heritage with the City of Charlottetown.

"It's one thing to hear someone's voice but sometimes you know it's good to see facial expressions, it's just good to see people," he said.

The city did hold a public meeting in regards to the University of P.E.I. residence on April 28, but Tuesday's meeting was the first time Islanders physically attended the meeting.

To comply with public health measures, only 50 people were permitted in the meeting at one time. An overflow room was set up in case more wished to attend. (Travis Kingdon/CBC)

Chairs at the meeting were spaced six feet apart, councillors sat far apart from each other and lots of hand sanitizer was available. Only 50 people were allowed in the room for the meeting.

"We had an overflow room downstairs for another 25 to 50 people so again we were prepared," said Rivard.

And as for whether that model sticks around for future meetings, depends on what the future looks like, said Rivard.

"If we remain with a 50 person limit then we will continue to do this. If the numbers rise and we're allowed to have a hundred, to a hundred plus then we may shift our thoughts on the overflow room," he said.

Greg Rivard says until the limits on gatherings change, bigger public meetings that may attract more people are on hold. (Travis Kingdon/CBC)

The 50 person limit on organized gatherings that currently exists in the province means that some of the larger public meetings will have to wait for the time being, he said.

"For some of the bigger items such as the short term rental topic you know we're in a wait on that until we're allowed to have a very large number of people in the room because, again, sensitive topic and we want to make sure that that as many people can be in the room as possible," he said.

"So again moving forward on those bigger larger ones. We'll wait to see what phase five, six, seven look like," he said.

New normal

Over the past months, Charlottetown Council has been streaming meetings and inviting members of the public to participate via other methods like videoconferencing. Members of the public who wanted to participate on Tuesday could still use that technology, and Rivard said he thinks the technology is here to stay.

"I think it's going to become part of the new norm. I think you know for councillors who may not be able to attend for whatever reasons … they can now take part," he said.

And he thinks it presents more opportunity for the public to be included in the process going forward as well.

"For those who can't make it here or are uncomfortable coming, you know, because of COVID, or uncomfortable speaking in front of public, now they can participate."

Questions that could have reasonably been expected to have been asked in a traditional public meeting format for new UPEI residence

….to UPEI about funding

1. The university's contribution of $40 million and the provincial government's investment of $20 million combined seem to be a rather small budget for a project this size. Can they disclose any other sources of funding (perhaps matching ones) from any other level of government?

2. What restrictions were tied to any funding received (be it for accommodations only) or did UPEI have the freedom to add extras not needed for the Games?

3. Is any public money supposedly earmarked for subsidizing the building of affordable housing for citizens (not students) going into this project?

…to UPEI about housing

1. What are the housing needs for current and expected student demographics?

2. What kind of accommodation does the university need most? Is it for families or singles? What type(s) is the proposed project providing?

3. How many requests are there for accommodation on campus during each semester (e.g., fall, spring, summer)? Is this accommodation intended for year-round student occupancy with the summer rates the same as for the rest of the year?

4. If rooms are occupied full time by students how will the building accommodate summer convention traffic?

5. What is considered affordable, with regards to student rent rates? Can only the affluent or those willing to go into debt afford to live there?

6. While the university insists the residence will alleviate the local affordable housing situation, why is the cost of living in residence so high and how will removing part time students from the local housing market help alleviate the shortage of long term rental accommodation for permanent residents of the city?

…to UPEI about design

1. Why was this very visible corner, an entryway into the city, selected for such a high building and why could it not be placed elsewhere on campus e.g., further back on the campus?

2. This will be the 3rd highest building in the city located on a high point of ground. Why is it not possible to keep the same profile as the existing residence, Andrews Hall (which already has a site exemption) that would complement the architecture already on campus?

3. Could the developer have built a structure similar to Andrews Hall to accommodate both the Games and student needs?

4. Why the need to go so high? Does this save money so that other features in the complex will fit into the budget?

5. What type of eco-conscious/eco-friendly components are part of this build?

6. Was the university's School of Sustainable Design Engineering involved with the concept of the project and what were their suggestions?

7. Were students and staff encouraged to give input?

8. What efforts will be made to mitigate bird strikes on such a high building?

9. Was any consideration given to underground parking? Why not?

10. Why has there been such a radical change in design from the images presented in the media in September 2019?

…to City Planning Department

1. Does this site-specific amendment apply to this project, this PID#, to the whole campus?

2. Is this a site-specific exemption or a project specific exemption? Can other 9 storey buildings go up without public consultation? The amendment is only for a 9-storey building. What about the other tower and connecting wing?

3. How do you safely fit 1600 athletes into a building meant to house 260 students?

4. Was an engineering study done to see if pilings were needed?

5. Are foundations being built to minimum standards, the Canada Building code or just what is recommended by a local builder?

6. As a representative traffic study can not be done during the pandemic how can you finalize plans toward signing a Development Agreement?

7. It is noted in the handout that the developer has tentatively agreed to an independent design review as a positive indicator for the City to agree to this amendment. What were the results of the independent design review?

8. What type of green/net zero characteristics does the project have, since both the city and province approved motions to ensure new buildings are at net zero.

9. Why has the developer not held a public information session before coming to planning board with their project e.g., similar engagement sessions have been held for the convent on Hillsborough Square redesign?

10. How does this project meet the principles as outlined in the City's Community Energy Plan?

Canada Games 2023 bid committee visiting P.E.I. on Sept. 19-20

Dave Stewart (dave.stewart@theguardian.pe.ca)
Published: Sep 09, 2018 at 6:35 a.m.

The national Canada Games bid committee will be on P.E.I. Sept. 19-20 to further assess the province's ability to host the 2023 Canada Winter Games. The local bid committee, from left, Heather Howatt, marketing, Wayne Crew, co-chairman, and Edna Flood, bid manager, have put together various bid books like this one the national committee will be looking at. It contains information, including how the local committee plans on handling challenges such as housing, feeding and transportation. - Dave Stewart

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The drive for the 2023 Canada Games on P.E.I. is beginning to ramp up, and the local bid committee is inviting Islanders to show their enthusiasm.

The national bid committee will be in the province Sept. 19-20 to evaluate the local bid committee's bid package and determine if P.E.I. can host the 2023 Games.

One of the components of the bid is to show community support. So, the local bid committee has devised a business-to-business plan to try to get 2,000 people or more to simply show support as easily as possible with no commitment involved.

Any Islander can jump in and show their support simply by going to canadawintergames2023.ca and entering the first three digits of their postal code.

P.E.I.'s bid is an Island bid and not a competitive process of pitting one community against another.

Wayne Carew, who co-chairs the bid committee with Brian McFeely, said phase one of the bid process was to look at the facilities that will be used.

"The 20-odd sports that we're going to be doing have to adhere to their national standards,'' Carew said. "These are competitive events leading (to) somebody going to the Olympics, so you can't have a pool that's a foot too short or a track that's a little too short. There are national standards around all those sports.''

P.E.I. passed that phase.

Now comes the second phase: meeting the people involved.

“They want the documentation to substantiate what’s our plan for housing and feeding the athletes and transporting them. At the airport you have 4,000 athletes all arriving at the same time (and you have to show them) how you are going to feed them and provide 1,000 meals an hour.’’

The national bid committee will also be assessing P.E.I.’s bilingual capability and handicapped accessibility. All venues must be accessible.

Edna Flood, P.E.I.’s bid manager, also pointed out that Tanya Gallant will act as chairwoman of the cultural component of the Games.

A final decision will be made shortly after a board meeting on Sept. 27.

As part of hosting the national bid representatives, a free barbecue and community event, featuring Canada Games alumni like Heather Moyse and Dave “Eli” MacEachern, will be held on the Charlottetown waterfront from 11 a.m. to 1 p.m. on Sept. 20.

Carew notes that 60 per cent of Olympic medallists are Canada Games alumni.

Heather Howatt, who handles marketing for the local bid committee, has no doubt P.E.I. is ready and will show that support at the barbecue.

“We have such a proud history in hosting sport events,’’ Howatt said. “We have to demonstrate that and get some people out and show that enthusiasm.’’

Carew said, according to Sports Canada, the economic impact of hosting a Canada Games is $100 million.

2023 also happens to be the 150th anniversary of P.E.I. joining Confederation.

Twitter.com/DveStewart

Bid committee co-chair says 2023 not contingent on new facility in Charlottetown

There has certainly been no shortage of talk and speculation about a new multi-use sports and entertainment complex in Charlottetown.

Much of the speculation lately has centred around the fact that P.E.I. is bidding for the 2023 Canada Winter Games.

Add that to the fact that the City of Charlottetown currently has a task force looking at a new arena, and the timeline certainly seems to fit. There seems to be just enough time to get the complex ready in time for the Games.

But there's been no official word. City council has yet to receive a report from the task force and vote on the matter.

Now, the national Canada Games bid committee is taking a good, long look at P.E.I.'s ability to host the games, and that includes a look at facilities.

The national committee will be on P.E.I. Sept. 19-20.

Wayne Carew, co-chairman of P.E.I.'s bid committee, said a new arena isn't the big story for them.

"We can deliver the Canada Games . . . without a new facility,'' Carew said. "If there is a new facility that can replace some of what we've already planned then that would be fine. We're not dependent on that happening.''

Carew also stressed that the Games, if P.E.I.'s bid is successful, will be an Islandwide event.

"We'll be doing events across the province, trying to get into as many communities as we can.''

Carew also notes that if a new facility is built, it would have to be finished and ready by 2022.

"Because (at) every one of the facilities we have to do test events in to make sure it works.''

New 260-bed residence coming to UPEI

Posted 2 years ago (Nov 8, 2018)

By: Allison O'Brien , THE CADRE

Bill and Denise Andrew Hall was built in 2005 and received it's first occupants in 2006. The building houses approximately 167 students every year. (Shelley Ebbett/UPEI)

A new 260-bed residence will be coming to UPEI, the government announced Thursday afternoon.

The initiative reflects the action items and priorities of the provincial Housing Action Plan and the Poverty Reduction Action Plan.

"This new residence will allow UPEI to continue retaining Island students and attracting international students while alleviating pressure on the Charlottetown housing market," said the news release.

The new 260-bed residence will become the largest on campus, with Bernadine having 147 beds, Andrew having 167 beds, and Blanchard having 126 beds.

"Today's announcement of a new residence is the culmination of a great collaboration between our University and Government. It will help us to accommodate more of our local and off-Island students' housing needs and also allow more students to experience residence life," said UPEI President Alaa Abd-El-Aziz in a statement issued to the campus community.

UPEISU President William McGuigan says the new residence will be a great addition to the campus community. (Allison O'Brien)

UPEISU President William McGuigan was pleased to hear the announcement.

"I think it's a very exciting time for the university community, the students and the entire province of Prince Edward Island. Housing has been a key issue the last while, and it's great to see some traction and some stuff actually happening to solve some of the issues in relation to this."

McGuigan hopes that the new residence will keep enrolment numbers high at UPEI.
"Currently we have 81 different countries represented at UPEI and 26% of our student body is international. It will be exciting to see with this added residence if that will help enrolment in the future at UPEI."

UPEISU Vice-President Academic and External Emma Drake says residence isn't affordable for everyone. (Allison O'Brien)

SU Vice-President Academic and External Emma Drake says that adding a new residence building isn't a one size fits all solution to affordable housing for students.

“I think 260 units is great, but at the same time it’s very divisive in the sense that the people who are living there can either afford it as they come from higher income backgrounds, or they are in exceptional amounts of debt.”

Costs to live in residence range from $4,719 per semester for a double room in Bernadine Hall to $5,551 per semester for a double suite in Bill and Denise Andrew Hall, including meal plans.

This is a staggering amount of money in comparison to the cost of rent paid by UPEI students living in townhouses and apartments, which is about $538 per month according to a housing survey conducted by the SU in the summer of 2018. According to this, students pay $2,152 per semester to live in apartments and townhouses.

Drake adds that most residences require students to have meal plans, which can be costly.

“With most modern residences, meal plans are required and there isn’t any choice within that. Requiring students to pay a premium to have a food plan isn’t an affordable option especially when it’s much easier to pick and choose what you want.”

Drake hopes the university will take a modern and innovative approach with the building, as opposed to the box-shaped buildings currently on campus.

“In BC, they face a lot of the same issues with housing availability, and I know their campus within the last 2 years, they have come up with more innovative solutions for residence such as micro units.”

Nano studios at UBC cost $685 per month and include a fully-furnished room, kitchen and bathroom. (University of British Columbia)

“I don’t think that residence is a one-size fits all solution. I think the university needs to understand that students going here come from all walks of life and each one of them have different economic backgrounds. I think the residence should reflect that,” says Drake.

“I guess it’s a bittersweet moment and it really depends on what they decide to build. I’m happy that we’re creating more infrastructure, we’re growing the campus, that’s always good and we’re investing into it. However, I hope that’s not at the cost of student’s pockets.”

PEI

Green MLA questions purpose of new UPEI Residence

'Let's call it what it is,' says Hannah Bell, suggesting new facility is being built with Canada Games in mind

CBC News · Posted: Nov 14, 2018 8:39 PM AT | Last Updated: November 14, 2018

Green Party MLA Hannah Bell says there was no mention of the new UPEI residence in the government's housing action plan. (CBC)

A Green Party MLA is questioning the motivation for building a new 260-bed residence at UPEI, suggesting it sounds more like an infrastructure project for the Canada Games than a plan to provide affordable housing for students.

"Let's call it what it is," said Hannah Bell. "It's adding infrastructure that will support a very large event that's going to be happening in 2023. But this isn't a housing strategy, this is infrastructure to support a broader scope of initiatives."

- Province announces 175 affordable housing units, new UPEI residence
- P.E.I. to host 2023 Canada Winter Games

New student housing for University of Prince Edward Island

Sep 6, 2019 | University (UPEI NEWS)
The following news release was distributed by the government of Prince Edward Island.

President Abd-El-Aziz, Premier King, and UPEI Student Union President Emma Drake hold a concept drawing on the site where UPEI's new residence will be built

A new residence building at the University of Prince Edward Island will create dedicated year-round housing for post-secondary students.

UPEI has the fastest growing university student population in Atlantic Canada and it will soon have a fourth on-campus residence through a partnership between the Province and UPEI. With 260 new beds, the new residence will alleviate pressure on the current housing market, improve the student experience and increase the university's housing capacity from 9.4 per cent to 15 per cent of the current student body.

The new housing residence will provide stable on-campus accommodations for Island, out of province, and international students to continue their studies or pursue employment opportunities all year long.

"With UPEI's record growth in the number of students, and many of these students interested in experiencing on-campus residence life, we have seen increased demand for our existing residences," said Dr. Alaa Abd-El Aziz, President and Vice-Chancellor of UPEI. "The new residence facility will also feature a number of classrooms to alleviate some of the pressure on our academic space. We are extremely grateful and excited to work with the Government of PEI to offer new housing options for our students that will help us achieve our vision of a vibrant, sustainable University community."

The new housing facility will also include 22,000 square feet for lecture halls and multi-purpose space. These additions will enhance the educational experience for students and staff alike, as well as attract conferences and major events to Prince Edward Island.

"Students are facing the same housing challenges as many Islanders," said Premier Dennis King. "This is a good step forward to help students focus on what matters most to them. The stability of knowing they have a place to call home all year long will positively add to their student experience and academic success."

The $60 million infrastructure project is expected to be completed by 2022 in advance of the Canada Games. This will complete UPEI's transformation to the Athletes Village where competitors from across the nation will take up temporary residence for the duration of the Games, after which UPEI students can begin moving in.

PEI

Province and UPEI release details on new Residence will increase housing capacity to 15 per cent of student body

Tony Davis · CBC News · Posted: Sep 06, 2019 12:42 PM AT | Last Updated: September 6, 2019

A render of the new 260-bed residence to be built at UPEI by 2022. (Coles Associates Limited)

UPEI will soon have its fourth residence on campus.

More details on a new 260-bed building that will bring the capacity of university housing from 9.4 per cent of the student body to 15 per cent were announced at UPEI on Friday.

The $60 million infrastructure project is expected to be done by 2022 and complete UPEI's transition to a temporary athletes' village for the 2023 Canada Winter Games.

Following the games the residence will provide year-round housing for post-secondary students.

"The needs for housing in Prince Edward Island today are challenging, and so I know the university has been dealing with that as well," said Premier Dennis King.

"We've been committed to addressing the housing concerns today and for tomorrow. I think the issue we have today is real, but announcements like today make it that much easier to deal with those challenges moving forward," King said.

UPEI president, Alaa Abd-El Aziz, left, UPEI Student Union president Emma Drake and P.E.I. Premier Dennis King hold a rendition of the new 260-bed student residence at UPEI. (Tom Steepe/CBC)

- Province announces 175 affordable housing units, new UPEI residence
- Green MLA questions purpose of new UPEI residence

The new housing facility will also include 22,000 square feet for lecture halls and multi-purpose space.

"It's historic for UPEI and it is the perfect time," said Alaa Abd-El Aziz, UPEI president.

"We need to show our city that we're working to find more housing for them and many of our students really want to experience the residence. So, with an increase of 260 rooms I think that will show that we mean it," he said.

There have been challenges accessing accommodations for students, said UPEI Student Union president Emma Drake.

"Growing capacity is certainly exciting and we look forward to the new students it will accommodate," she said.

The province is contributing $20 million toward the housing project, with UPEI funding the remaining $40 million

Editorial: who benefits from new residence?

The Cadre September 11, 2019

By Sam Arseneau

Design of the future UPEI residence (photo credits: Coles Associates Limited)

Students are faced with many challenges they must overcome when first coming to university, but one of which should not be if they will find a place to live. However, that is a major problem for students at UPEI.

Residence, which could once be counted on as a place to stay for students is now met with a dilemma of having too many students apply and not enough room for them. The housing crisis on PEI affects the way housing works, even on campus. With a first-come-first-serve basis many students are left without knowing where they will stay. One of the ways UPEI claims it is combatting this issue is by recently announcing that a new residence will be built on campus.

The new residence will be the largest one yet, it will consist of 260 beds, classrooms, as well as a theatre. The new $60 million residence, funded by both the PEI government and UPEI, is expected to be finished right before the Canada Games 2022. Given its size it will take some months to build. I question why it can’t be built sooner.

Just in time for the Canada Games, the new residence will be used as housing for the athletes during the games, as UPEI becomes the athlete's village. Do I think this is a happy coincidence? No.

It would be a perfect twist of fate for the new residence to be finished in time for when UPEI becomes home to the Canada Games athlete's village, giving athletes the first stay in the new infrastructure.

It's partially because of the Canada Games that the province is funding the new building. Given that PEI is in a housing crisis and students have been struggling to find housing for years the government and UPEI seem to have postponed this funding a bit too far.

This year many students were moved to an "off-campus residence" which consists of 93 rooms rented from the Dutch Inn, located in Cornwall, 7.1kms from the UPEI campus. This was done in an attempt to give more students safe housing that they could count upon. However, many students were turned away due to lack of space. Students that were accepted to the university and were expecting lodging are now forced to find a space to stay in the middle of a housing crisis.

Given the situation, the government could have aided students' experience by commencing the project sooner. It a well understood issue, and it's a pressing one that continues to grow. We must now consider the facts and question if the funding and new residence is really just to help students who are in need of a place to live, or if it is to give the Athlete's Village new, modern lodging and show off our new infrastructure as a way to boast.

PUBLIC ENGAGEMENT

The Federation of Prince Edward Island Municipalities has prepared a toolkit to help municipalities implement the Municipal Government Act in accordance with the principles of open government – accountability, engagement and transparency. This guide has been prepared to provide Council members with information guidance on public engagement.

Public engagement is a critical part of modern democracy. Engagement provides not only information from citizens that is important to Council, but it also increases public confidence in democratic institutions, and can play an important role in public acceptance of Council decisions. Public engagement can take many forms including public meetings, invited meetings, surveys, social media engagement, referendum, or any other process where two-way engagement is initiated.

Engagement includes accessibility

Accessibility refers to both accommodation for residents with physical challenges, as well as clarity around municipal office operations. Section 85 of the Municipal Government Act contains the following requirements:

(1) A council shall,
(a) by resolution, designate a place in the municipality as its municipal office;
(b) provide public notice of the location of the municipal office; and
(c) notify the Minister, in writing, of the civic address of the municipal office.
(2) Within five years after the coming into force of this section, a council shall
(a) ensure that its municipal office is accessible to all members of the public; and
(b) establish, publish and maintain a schedule of not less than twenty hours in each week during which the municipal office shall be open to serve the public.

Public engagement is about communication

Public engagement is a two-way street. It is how Council proactively seeks input directly from citizens and provides a direct opportunity for Council to speak directly to citizens on an issue. Good public engagement leads to better decision-making. It also helps build long-term relationships between Council and citizens.

Any public engagement exercise should have clear objectives in setting up expectations for Council and the public, and the level of engagement. Council must clearly communicate to the

public as to the expected level of engagement so as not to set up false expectations. The purpose of each public engagement level can be broadly categorized[1]:

- **Inform** on issues or decisions;
- **Consult** to gather viewpoints and opinions
- **Involve** to obtain feedback and input on possible solutions
- **Collaborate** to actively work with citizens in developing solutions
- **Empower** to provide citizens with the final decision

What level of engagement is appropriate

Depending on the issue or initiative, the appropriate level of engagement may vary. Limited public engagement may be acceptable when the issue is of limited interest, when there is a clear community consensus, or external factors (privacy, legislative, or otherwise) limit the amount of engagement possible. A higher level of engagement is appropriate where there is widespread interest in the issue, there is no clear consensus, or the issue will have substantial implications on the Municipality.

What is involved with each level of engagement?

Each of the five levels of engagement can be carried out in various ways. But along with each level of engagement is also a commitment to the public and stakeholders.

Informing the public and stakeholders can be accomplished by making minutes of meeting available, by adding content to the municipal website, or through other communications methods. This method is most appropriate for issues that are routine and non-controversial, or for which there is a legal and/or regulatory imperative that compels a directed decision. The commitment is to provide a complete level of information that enables the public and stakeholders to understand the issue and the reason for the decisions made. Council must be prepared to answer questions and further educate residents during this process.

Consulting the public and stakeholders can be achieved through targeted public meetings, seeking input through focus groups, survey and questionnaires, through social media and other electronic forums, or by direct consultations with impacted groups. This is often most appropriate for decisions that mainly impact a focused group, or when special expertise is required. The commitment is to provide the information and context on the issue, and to clearly indicate how the input will affect the issue or decision.

Involving the public and stakeholders is a more extensive process, often with a more extended and varied set of consultations. Although similar methods are used as the consulting process, multiple sessions at various stages of the process, and multiple methods are often used. The

[1] These categories are adapted from the Public Participation Spectrum from the International Association for Public Participation.

commitment is that public input will be sought at various stages, and the impact of that input will be communicated back at each stage.

Collaborating with the public and stakeholders brings others in as a partner in developing options and solutions. This process often involves a more intensive consultative process with facilitated brainstorming and/or option analysis sessions. The commitment is that options and solutions will be developed through the process and not prescribed beforehand, and that the process will be meaningful.

Empowering the public and stakeholders places the final decision-making power with the public. This process often involves techniques such as a binding referendum, and is used when issues have broad public interest, may be divisive or controversial, and/or have major long-term implications. The commitment is that the decisions made will be respected and implemented.

Menu

MEETINGS

Open Municipal Government Toolkit – Meetings

Download the Open Government Toolkit Instructions

In Prince Edward Island, the Municipal Government Act requires municipal councils to hold meetings that are open and accessible to the public. Complying with this requirement is a cornerstone to open government and good governance. Holding open meetings ensures that decision making is transparent and accessible to the public. Open meetings provide an opportunity for citizens to observe and understand the decision-making process as resolutions and actions are debated and discussed in public.

The Supreme Court of Canada has ruled on the importance of open meetings. In 2007, the Supreme Court of Canada struck down an interim control by-law made by the City of London, Ontario. During the public meeting, which lasted 8-minutes, the City Council introduced, gave three readings to, and passed 32 by-laws including the interim control by-law without public debate or discussion. The Supreme Court of Canada found that there was a statutory obligation to hold public meetings.

> “Municipal law was changed to require that municipal governments hold meetings that are open to the public, in order to imbue municipal governments with a robust democratic legitimacy. The democratic legitimacy of municipal decisions does not spring solely from periodic elections, but also from a decision-making process that is transparent, accessible to the public, and mandated by law. When a municipal

> government improperly acts with secrecy, this undermines the democratic legitimacy of its decision, and such decisions, even when intra vires, are less worthy of deference."

London(City) v RSJ Holdings Inc.

Section 118 (1) of the Municipal Government Act states that all council meetings and council committee meetings must be conducted in public and members of the public are entitled to attend all Council and Council committee meetings unless the meeting is closed by resolution. The public should be welcome at Council and council committee meetings. Council must commit to discussing and debating most issues in these public forums.

What is a meeting?

The term "meeting" is not defined by the Municipal Government Act but is understood to mean scheduled or special Council meetings or meetings of council committees such as the planning committee or the finance committee.

However, municipalities may hold other gatherings or events, such as workshops, planning sessions or retreats, which may be considered a meeting. Care must be taken to consider whether an informal gathering or event is a meeting that should be open to the public.

The Guide to Open Meetings outlines how to determine whether a gathering or event is a meeting that should be open to the public. Best practice indicates that most gatherings held by Council should be open meetings.

The Province of Prince Edward Island has provided a sample procedural bylaw.

Notice Requirements

An important step in ensuring openness and transparency is to provide clear and detailed advanced notice of meetings. The Municipal Government Act and the Procedural Bylaw

Regulations lay out meeting notice requirements including sharing an annual schedule of meetings.

The Guide to Meeting Notice outlines meeting notice requirements and includes a checklist to ensure that all requirements have been met.

Closed Meetings

Section 119 (1) of the Municipal Government Act lays out specific reasons for holding a closed meeting. In general terms, only confidential matters may be discussed at a closed meeting.

Closed meetings can only be held by resolution which must be passed before the closed meeting is held. This resolution must specifically state which part of section 119 (1) is being considered.

Council cannot pass a resolution or bylaw during a closed meeting except for resolutions giving instructions to a lawyer or person acting on behalf of the municipality or to an employee.

The Guide to Closed Meetings provides Council members with information about holding a closed meeting as well as a checklist to ensure that all requirements of section 119 (1) of the Municipal Government Act are met.

Downloads

Guide to Open Meetings (pdf)
Sample Procedural Bylaw – developed by Municipal Affairs (Word)
Guide to Meeting Notice and checklist (pdf)
Guide to Closed Meetings (pdf)
Open Government Toolkit Instructions (pdf)

Search this website

MISSION STATEMENT

• to promote and foster effective, efficient, and accountable municipal government in Prince Edward Island;
• to present, as a strong and unified voice, the interests of its member municipalities;
• to guide and assist member municipalities in enhancing their overall operation and decision-making processes; and
• to guide and improve provincial and federal legislation, programs, and policies that reflect and impact upon municipal interests.

Federation of PEI Municipalities

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CITY OF CHARLOTTETOWN

COUNCIL CODE OF CONDUCT BYLAW

BYLAW #2018 - 15

BE IT ENACTED by the Council of the City of Charlottetown as follows:

PART I – INTERPRETATION AND APPLICATION

1. Title

1.1. This bylaw shall be known and cited as the "Code of Conduct Bylaw."

2. Purpose

2.1. The purpose of this bylaw is to set minimum expectations for the behaviour of Members of Council in carrying out their functions and making decisions that benefit the City of Charlottetown.

3. Authority

3.1. Section 107 of the *Municipal Government Act* R.S.P.E.I. 1988, Cap. M-12.1., provides that a Council must establish a Code of Conduct bylaw to govern the conduct of Members of Council.

4. Application

4.1. This bylaw applies to the Mayor and all Members of Council. It operates together with, and as a supplement to, the applicable common law and the following statutes, any regulations or other delegated legislation made pursuant to them:

(a) the *Municipal Government Act*

(b) the *Criminal Code of Canada*

4.2. This Code of Conduct is to operate in addition to other bylaws, policies and administrative directives as may be determined by Council.

5. Definitions

5.1. In this bylaw, any word and term that is defined in the *Municipal Government Act* has the same meaning as in that Act.

5.2. In this bylaw,

(a) "Act" means the *Municipal Government Act*.

(b) "Chief Administrative Officer" (CAO) means the administrative head of a municipality as appointed by Council under clause 86(2)(c) of the *Municipal Government Act*.

(c) "City" means the City of Charlottetown.

(d) “Confidential Information” means information that could reasonably harm the interests of individuals or organizations, including the City if disclosed to persons who are not authorized to access the information. This type of information includes, but is not limited to, privileged information, personal information, third party information, technical, financial or scientific information and any other information collected, obtained or derived for or from municipal records that must or may be kept confidential.

(e) "Council" means the Mayor and other members of the Council of the City.

(f) “Councillor” means a Member of Council other than the Mayor.

(g) “Family Member” means in relation to a person, a spouse, parent, child, brother, sister, aunt, uncle, grandchild, grandparent, mother-in-law, father-in-law, brother-in-law, sister-in-law, son-in-law or daughter-in-law of the person;

(h) "Person Closely Connected", in relation to a member, means a family member, an agent, a business partner or an employer of the person;

(i) "Staff” includes the Chief Administrative Officer (CAO) and all staff of the City, whether full-time, part-time, contract, seasonal or volunteers.

(j) “Unduly Critical” means to excessively find fault or to judge with severity.

6. Interpretation

6.1. This bylaw is to be given a broad, liberal interpretation in accordance with applicable legislation and the definitions set out in it.

7. Periodic Review

7.1. The Code of Conduct will be brought forward for review at the end of each term of Council or when relevant legislation is amended, and at other times when appropriate to ensure that it remains current and continues to be a useful guide to Members of Council.

PART II – PRINCIPLES

8. Guiding Principles

8.1. Members of Council are keepers of the public trust and must uphold the highest standards of ethical behaviour.

8.2. Members of Council are expected to act lawfully. They are expected to be free from undue influence and not act, or appear to act, in order to gain financial or other benefits for themselves, family, friends or business interests as a result of the member holding municipal office.

8.3. Members of Council have a duty to make decisions based on the best interests of the City as a whole.

8.4. Members of Council are responsible for the decisions that they make. This responsibility includes acts of commission and acts of omission. In turn, decision-making processes must be transparent and subject to public scrutiny.

8.5. Members of Council must act responsibly within the law and within the authority of the Act. All Members of Council must observe the Code of Conduct. This means disclosing actual or potential conflict of interest relating to their public duties and taking steps to resolve the conflict for the protection of the public interest.

8.6. Members of Council must demonstrate and promote the principles of the Code of Conduct through their decisions, actions and behaviour. Their behaviour must build and inspire the public's trust and confidence in municipal government.

8.7. Members of Council must conduct public business efficiently and with decorum. They must treat each other and others with respect at all times. This means not using derogatory language towards others, respecting the rights of other people, treating people with courtesy and recognizing the different roles others play in municipal government decision making.

8.8. Members of Council have a duty to be as open as possible about their decisions and actions. This means communicating appropriate information openly to the public about decision-making processes and issues being considered, encouraging appropriate public participation, communicating clearly and providing appropriate means for recourse and feedback.

PART III – CONDUCT OF COUNCIL

9. General Conduct

9.1. Members of Council must adhere to the following principles and provisions:

(a) Members of Council must serve, and be seen to serve, their constituents in a conscientious and diligent manner;

(b) Members of Council must be committed to performing their functions with integrity and to avoiding conflicts of interest and the improper use of the influence of their office;

(c) Members of Council must not extend, in the discharge of their official duties, preferential treatment to persons closely connected to the member or organizations and groups in which the member or persons closely connected to the member have a direct or indirect pecuniary interest;

(d) Members of Council are expected to perform their duties in office and arrange their private affairs in a manner that promotes public confidence and will bear close public scrutiny;

(e) Members of Council must seek to serve the public interest by upholding both the letter of the law and the spirit of applicable federal, provincial and municipal laws;

(f) Members of Council are obliged to question any request to act or make a decision that they think may be unethical or unlawful;

(g) Members of Council must avoid behaviour that could constitute an act of disorder or misbehaviour. Specifically, Council officials, staff and advisory body members must avoid conduct that is an abuse of power or otherwise amounts to discrimination, intimidation, harassment, verbal abuse, or the adverse treatment of others; and

(h) Members of Council shall recognize the responsibility of the Mayor to accurately communicate the decisions of the Council, even if there is disagreement with such decisions. Members of Council must respect the decision(s) of Council once a decision is rendered.

In addition, while respecting the right to have contrary positions and opinions, members shall avoid any words or actions that are unduly critical or derogatory towards other members of Council, staff, of the City's official position on any topic.

(i) Members of Council will respect the role of staff in the administration of the business affairs of the City.

10. Confidential Information

10.1. Members of Council must respect rules regarding confidentiality, disclosure and access to all personal information in the control of the City of Charlottetown. No Member of Council will disclose or release by any means to any member of the public, any confidential information acquired by virtue of their office, in either oral or written form, except where required by policy or law or authorized by the Council to do so.

10.2. No Member of Council will use confidential information for personal or private gain or for the gain any other person or entity.

10.3. Members of Council should not access or attempt to gain access to confidential information in the custody of the City unless it is necessary for the performance of their duties and is not prohibited by legislation, regulations and Council policy.

10.4. Council shall keep confidential information that falls into the following or similar categories:

(a) commercial information which, if disclosed, would likely be prejudicial to the City or parties involved;

(b) information received in confidence which, if disclosed, would likely be prejudicial to the City or parties involved;

(c) personal information, other than a person's address, that is protected under the *Municipal Government Act*; and

(d) human resource matters.

11. Public Disclosure Statements

11.1. Each Member of Council is required to file a Council Member Disclosure Statement (Schedule 'A') with the CAO within thirty (30) days of being elected.

11.2. The Disclosure Statement will identify:

(a) the name and nature of employment;

(b) financial interests;

(c) other involvement that may be seen to affect fairness in making a municipal decision.

11.3. Public Disclosure Statement will not include specific details about a Member of Council's personal financial matters such as salary, the value of holdings or other specific personal financial information.

11.4. Each Council member is required to declare any subsequent changes to employment, financial interests or other involvements. The CAO shall make amendments to the Council member's Disclosure Statement, including a notation stating the date on which the statement is amended.

12. Gifts and Benefits

12.1. No Member of Council shall accept a fee, advance, cash, gift, gift certificate or personal benefit that is connected directly or indirectly with the performance of their duties of office, except for the following:

(a) compensation authorized under the Council Remuneration Bylaw;

(b) gifts or benefits that normally accompany the responsibilities of office and are received as an incident of protocol or social obligation;

(c) a suitable memento of a function honouring the Member of Council;

(d) food, lodging, transportation and entertainment provided by another government or by a conference, seminar or event organizer where the Member of Council is either speaking or attending in an official capacity at an official event;

(e) food and beverages consumed at banquets, receptions or similar events;

(f) communication to the offices of a Member of Council, including subscriptions to newspapers, and periodicals; and

(g) sponsorships and donations for community events organized or run by a Member of Council or by a third party on behalf of a Member of Council.

12.2 No Member of Council shall accept the use of property or facilities, such as a vehicle, office or vacation property, at less than fair market value.

12.3 No Member of Council shall sell property, goods and services to the City at higher than fair market value.

12.3 A fee or advance paid, or a gift or benefit provided, with the Member's knowledge, to a person closely connected to a member is deemed to be a gift to the Member of Council.

13. Use of Municipal Property, Equipment and Services

13.1. No Member of Council shall use, or request the use of, any municipal property, including surplus material or equipment for personal convenience or profit, unless the property is:

(a) available for such use by the public generally and the Member of Council is receiving no special preference in its use; or,

(b) made available to the Member of Council in the course of carrying out Council activities and duties.

13.2. No Member of Council shall use, or request the use of, for personal purpose any municipal staff services, property, equipment, services, supplies or other municipally-owned materials, other than for purposes connected with the discharge of municipal duties.

13.3. No Member of Council shall obtain, or attempt to obtain, personal financial gain from the use or sale of municipally-developed intellectual property.

13.4. No Member of Council shall use information, or attempt to use information, gained in the execution of their duties that is not available to the general public for any purposes other than carrying out their official duties.

13.5. No Member of Council shall obtain, or attempt to obtain, personal financial gain from the use or sale of personal property to the City, except in compliance with the Act and the Conflict of Interest Bylaw.

13.6. Use of City Email Accounts

a) All emails that are used to conduct or support official City of Charlottetown Council business must be sent using a “@charlottetown.ca” address.

b) Non-work email accounts must not be used to conduct or support official City of Charlottetown Council business.

c) Members of Council must ensure that any emails containing sensitive information must be sent from an official Council email.

d) Under no circumstances should users communicate material (either internally or externally), which is defamatory, obscene, or does not comply with the Council Code of Conduct Bylaw.

e) Automatic forwarding between personal & City email accounts will be prohibited to prevent restricted, protected and/or confidential material from being forwarded inappropriately.

14. Reimbursable Expenses

14.1. Members of Council may claim reimbursement by the City for the following expenses in accordance with the Council Remuneration Bylaw.

(a) expenses incurred by Members of Council for an official duty or function that are modest and represent the prudent use of public funds and do not involve the purchase of alcoholic beverages; and

(b) hospitality expenses incurred by Members of Council for meetings that include:

i. engaging representatives of other levels of government, international delegations or visitors, the broader public sector, business contacts and other third parties in discussions on official matters;

ii. providing persons from national, international and charitable organizations with an understanding and appreciation of the City or the workings of its municipal government;

iii. honouring persons from the City in recognition of exceptional public service and staff appreciation events;

iv. recognition events for various agencies, boards and commissions of the City; or

v. other community groups or associations.

15. Support for Charities

15.1. Members of Council may lend their support to and encourage community donations to registered charitable, not-for-profit and other community-based groups; however, all amounts raised through fundraising efforts shall go directly to the groups or volunteers or chapters acting as local organizers of the group.

15.2. No Member of Council shall directly or indirectly manage or control any monies received relating to fundraising for registered charitable, not-for-profit and other community-based groups.

16. Election Campaigns

16.1. No Member of Council shall use supplies, services, staff, municipal logo or other resources of the City for any election campaign or campaign-related activities.

16.2. A Member of Council may only utilize a municipal facility or access equipment in the same manner as any other candidate for an election campaign purpose.

16.3. All Members of Council shall be respectful of the role of the CAO and Municipal Electoral Officer (MEO) in managing the municipal election process and shall not interfere with how the CAO and MEO carries out their duties.

16.4. No Member of Council shall use the services of persons for campaign-related activities during hours in which those persons receive any compensation from the City.

17. Planning or Procurement Proposals before Council

17.1. No Members of Council shall solicit or accept support in any form from an individual, group or corporation, with any planning or procurement proposal before Council.

18. Improper Use of Influence

18.1. No Member of Council shall use the influence of their office for any purpose other than for the exercise of their official duties.

18.2. When a matter pertaining to the City is before any tribunal, Members of Council shall not contact any tribunal members.

18.3. In matters relating to municipal administration, direction shall be given to the CAO by Council as a whole rather than by individual Members of Council.

19. Business Relations

19.1. No Member of Council shall allow the prospect of their future employment by a person or entity to affect the performance of their duties to the City.

19.2. No Member of Council shall borrow money from any person who regularly does business with the City, unless such person is an institution or company whose shares are publically traded and who is regularly in the business of lending money.

19.3. No Member of Council shall act as a paid agent before Council or a committee of Council or any agency, board or committee of the City.

19.4. No Member of Council shall refer a third party to a person, partnership or corporation in exchange for payment or other personal benefit.

20. Conduct at Council Meetings

20.1. Members of Council shall conduct themselves with decorum at Council meetings in accordance with the provisions of the Procedural Bylaw.

21. Respectful Workplace

21.1. Members of Council shall encourage public respect for the City and its bylaws. All Members of Council have a duty to treat members of the public, one another and staff appropriately and without abuse, bullying or intimidation, and to ensure that their work environment is free from discrimination and harassment.

22. Interactions of Council with Staff and Service Providers

22.1. Council has the responsibility to govern in accordance with the Act and regulations.

22.2. Council officials must act in accordance with Council's Procedural Bylaw and the conduct guidelines outlined in this Code of Conduct Bylaw.

22.3. Members of Council shall be respectful of the role of staff to advise based on political neutrality and objectivity and without undue influence from any individual member or faction of the Council.

22.4. Members of Council must not direct or influence, or attempt to direct or influence any municipal staff in the exercise of their duties or functions.

22.5. Pursuant to subsection 93.(6) of the MGA, Members of Council are to direct any inquires to the CAO rather than access staff directly. No Council member or member of a Council committee shall publicly or privately instruct or direct an employee of the City except through the CAO. Members of Council are not to contact or issue instructions to any of the contractors, tenderers, consultants or other service providers to the City.

22.6. Members of Council must not make public statements attacking or reflecting negatively on the City of Charlottetown staff or invoke staff matters for political purposes.

23. Employment of Persons Closely Connected to Members of Council

23.1. No Member of Council shall attempt to influence any municipal employee to hire or promote a person closely connected to the member.

23.2. No Member of Council shall make any decision or participate in the process to hire, transfer, promote, demote, discipline or terminate any person closely connected to the member.

23.3. No Member of Council shall attempt to use a family relationship for their personal benefit or gain.

PART IV – COMPLAINTS

24. Breaches, Complaint Handling and Internal Resolution

24.1. Members of Council are to abide by the requirements of this Code of Conduct, and shall endeavour to resolve interpersonal disputes in good faith.

24.2. Before commencing the formal internal resolution procedure specified below, the Member or Members of Council who are a party or parties to an alleged contravention of this Code of Conduct will endeavour to resolve the matter informally in a courteous and respectful manner, recognizing that they have been elected to represent the best interests of the City.

24.3. Alleged breaches of this Code of Conduct by a Member of Council shall be submitted in a written complaint addressed to the Mayor and/or the CAO within three (3) months of the last alleged breach.

24.4. In the event that the Mayor is the subject of, or is implicated in a complaint, the complaint shall be addressed to the Deputy Mayor.

24.5. If the alleged contravention cannot be informally resolved, the Mayor will facilitate discussion between the parties.

24.6. If the matter is not satisfactorily resolved after mayoral facilitation, the Mayor, with the assistance of the CAO will commence the formal internal resolution process by appointing an independent third party investigator who has the necessary professional skills, knowledge and experience to carry out the role and investigate the complaint in a fair and objective manner.

24.7. If the Mayor is involved in the alleged contravention of the Code of Conduct, the Deputy Mayor shall assume the role of the Mayor in the facilitation process and the appointment of any third party investigator. All deliberations regarding alleged contraventions of the Code should be conducted in confidence.

24.8. If a third party investigator is appointed, the parties:

(a) shall provide reasonable assistance to the investigator if requested; and

(b) must participate in good faith in the investigation.

24.9. The role of the investigator is to:

(a) consider the alleged contravention of the Code of Conduct;

(b) ensure that the parties involved are given an opportunity to be heard by the arbiter;

(c) explore if the alleged contravention can be resolved between the parties without making any findings; and

(d) failing resolution between the parties, the third party investigator will provide an investigation update within ninety (90) days of their appointment to the Mayor or Deputy Mayor, as applicable, and to the complainant and the respondent.

24.10. The third party investigator will provide a written, confidential report of the findings of the investigation, including findings as to whether there has been a breach of this Code of Conduct, to the Mayor or Deputy Mayor, as applicable, and to the complainant and the respondent. The CAO will receive and retain all reports prepared in relation to breaches of the Code of Conduct.

24.11. Based on the findings in the report of the third party investigator, the Council, Mayor or Deputy Mayor will determine the most appropriate action to resolve the matter.

24.12. Council may, in accordance with section 107(3) of the Act:

(a) dismiss the complaint;

(b) require the Member of Council to remove themselves from the meeting if conduct is deemed to be inappropriate;

(c) reprimand the Member of Council for a breach of this Code of Conduct Bylaw;

(d) suspend the remuneration paid to the member in respect of their services as a Member of Council for a period of up to 90 days;

(e) request for an apology to Council, the complainant, or both;

(f) impose a fine of not more than $500; or

(g) impose any other sanction that is deemed appropriate in the professional judgment of the third party investigator, where so enabled in the Act.

24.13. The principles of natural justice must be observed during the arbitration of an alleged contravention of this Code of Conduct. There is a right to a fair hearing before an independent investigator. The Member of Council who is the subject of an alleged contravention must be given all relevant information in regard to the allegation and an opportunity to respond and be supported if the member so desires. Any Member of Council who alleges a contravention of the Code of Conduct must not be disadvantaged because of such action.

24.14. The Code of Conduct does not override, prevail over, or amend legislation applicable to the roles, responsibilities, and duties of Members of Council.

24.15. Members of Council are individually responsible for seeking relevant advice from the CAO as to the application of the Code of Conduct.

25. Effective Date

25.1. This Code of Conduct Bylaw, #2018-15, shall be effective on the date of approval and adoption noted below:

First Reading:

This Council Code of Conduct Bylaw, #2018-15, was read a first time and approved by a majority of members present at the Council meeting held on the _____ day of _____, 2018

Second Reading:

This Council Code of Conduct Bylaw, #2018-15, was read a second time and approved by a majority of members present at the Council meeting held on the _____day of _____, 2018

Approval and Adoption by Council:

This Council Code of Conduct Bylaw, #2018-15, was adopted by a majority of Council members present at the Council meeting held on the _____ day of _____, 2018.

Witness the corporate seal of the City.

_____ _____

Mayor **Chief Administrative Officer**

This Council Code of Conduct Bylaw, #2018-15 adopted by the Council of the City of Charlottetown on the _____ day of _____ is certified to be a true copy.

_____ _____

Chief Administrative Officer **Date**

"This document is an office consolidation of this Bylaw. It is intended for information and reference purposes only. This document is not the official version of the Bylaw. Where accuracy is critical, please consult official sources. If you find any errors or omissions in this consolidation, please contact the Records Management Clerk"

SCHEDULE 'A'

FORM MGA-MG-2
COUNCIL MEMBER DISCLOSURE STATEMENT

A Disclosure Statement form is provided by the Minister of Municipal Affairs and is available on the Province of Prince Edward Island's website.

City of Charlottetown

Community Energy PLAN

For a naturally bright future.

CHARLOTTETOWN

PHOTO: TOURISM PEI @IVORYORPHAN INSTAGRAM

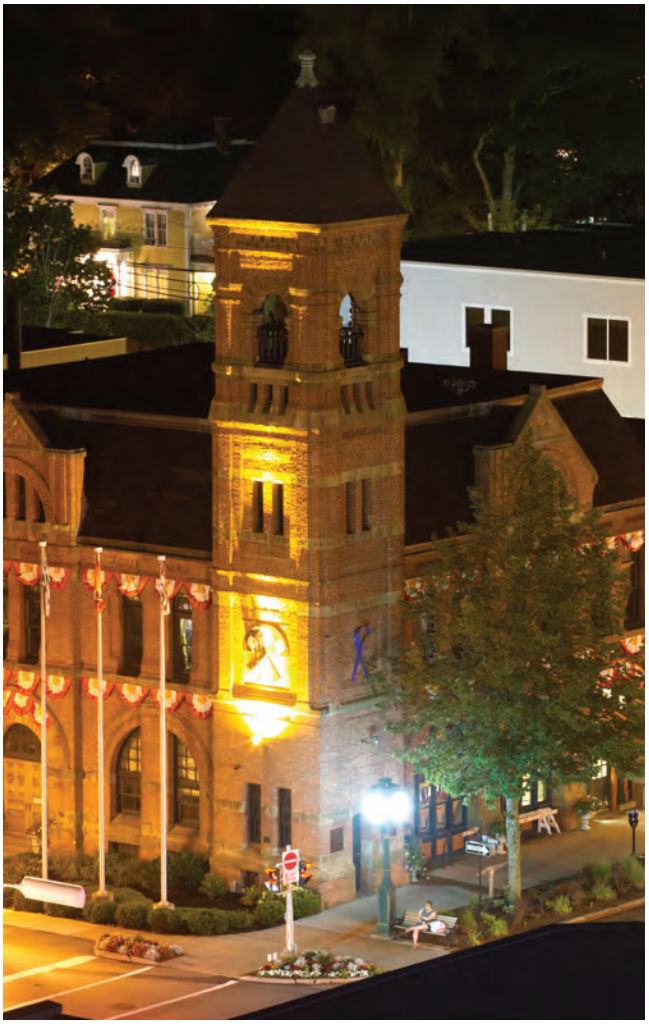
TABLE OF CONTENTS

GLOSSARY OF TERMS

BAU	Business-as-Usual
CAD	Canadian Dollars
tCO_2e	tonnes of Carbon Dioxide equivalent
CEP	Community Energy Plan
ICLEI	International Council for Local Canada Environmental Initiatives in Canada (also known as Local Governments for Sustainability)
ICSP	Integrated Community Sustainability Plan
FCM	Federation of Canadian Municipalities
GHGs	Greenhouse Gases
GJ	Gigajoule
GWP	Global Warming Potential
KwH	Kilowatt Hour
MCIP	Municipalities for Climate Innovation Program
MCH	Minimum Code Compliant Home
MSW	Municipal Solid Waste
PACE	Property Assessed Clean Energy
PCP	Partners for Climate Protection
PJ	Petajoule
PLE	Passive Low Energy Home
PV	Photovoltaic
QUEST	Quality Urban Energy Systems of Tomorrow (organization based in Canada)
RE	Renewable Energy
SCC	Social Cost of Carbon
TCBO	Total Cost of Building Ownership

HOW TO READ THE COMMUNITY ENERGY PLAN

This Community Energy Plan (CEP) provides a vision and direction to using only renewable sources to meet Charlottetown's energy needs. It is not intended to be prescriptive or provide a detailed roadmap. It provides an overview of what the City's 100% renewable energy commitment means and how it was developed, followed by some context in which the strategy must be considered. Detail is given on some potential technological options and actions that can be taken to transition Charlottetown's buildings and transportation to use only renewable energy. Throughout the CEP, "the City of Charlottetown" or "the City" refers to the municipal corporation, while "the city" (with a lower-case "c") refers to the whole community.



EXECUTIVE SUMMARY

Municipalities play an important role in the international, national, regional and local efforts to reduce greenhouse gas emissions through improving energy efficiency and increasing the use of renewable energy. This Community Energy Plan (CEP) helps define the City of Charlottetown's community energy priorities with a view to improving efficiency, cutting emissions, and driving economic development and addresses the City's sustainability goal to:

> **"Create a community greenhouse gas (GHG) emissions reduction strategy for the City of Charlottetown that includes setting and implementing long-term emission reduction targets at the corporate and community levels."**

First Steps

To set a baseline for this plan, 2015 corporate and community-level energy and emissions inventories were completed. The City's GHG inventory of municipal operations tracks its energy use, energy/waste disposal expenditures, and GHG emissions. GHG emissions in the City's municipal operations inventory in 2015 were almost 7,500 tonnes of carbon dioxide equivalent (tCO_2e), with annual expenditures of roughly $3.5-$4 million dollars, figures which will increase in the foreseeable future, with a business-as-usual (BAU) approach.

The Community Energy and Greenhouse Gas Inventory Report for 2015 indicated end-use energy of 5.35 petajoules (PJ), energy expenditures of $176 million, and emissions of 456,000 tCO_2e. Annual climate costs were estimated at $146 million. Chronic exposure to air pollution causes illness and death. An estimated seven mortalities each year in Charlottetown are associated with air pollution with the social costs of morbidity and mortality estimated at $85 million.

Clearly the climate and air pollution costs are too high to maintain. There is an ethical obligation to address these social costs. Furthermore, increasing energy efficiency and clean, renewable energies will generate new jobs, reduce energy demand, provide reliable and affordable energy, and lead to greater energy price stability.

The City of Charlottetown has held educational events on climate change and community energy planning. Public consultations and surveys engaged more than 300 residents. Emergent themes formed the basis of the City's community vision for sustainable energy.

Extensive research has been conducted, with assistance from a wide range of subject-matter experts, to evaluate various climate change and air pollution solutions which, taken together, can help to reduce energy use in buildings and transportation, make a shift to renewable energy sources, and foster sustainable community development. These measures and technologies (see Appendix B) underwent a comprehensive technical review by more than 50 experts and stakeholders. The CEP is remarkably flexible in terms of what measures and technologies may be used to reach energy goals. In other words, there are multiple pathways to a 100% renewable city.

The scenario on page 11 paints a picture of 2050 Charlottetown with 100% renewable energy, showing a 49% reduction in energy demand. The move to greater energy efficiency and renewable resources will lead to energy cost savings, energy price and economic stability, reduced climate and health costs and improved well-being. Energy efficiency upgrades could generate over 500 10-year full-time jobs, adding $60 million in GDP to the city annually over the next decade. Overall, this transition to a renewable city will create more than 600 30-year full-time jobs related to energy efficiency and renewable energy.

Community Vision for a Sustainable Energy Future

Charlottetown aims to quickly reduce community GHG and air pollutant emissions while securing reliable affordable energy locally, increasing energy efficiency, and creating jobs and economic growth. The City envisions exceeding current targets in 2030 and transitioning all energy for homes, businesses, cars, and trucks to clean, renewable sources before 2050. In short, the City's vision is:

> **"By 2050, Charlottetown is a carbon neutral, diverse and economically strong community, powered only by renewable energy."**

TARGETS

1. **Community:** Adopt the City of Charlottetown CEP and transition to a 100% renewable and carbon neutral city by 2050 at the latest, with GHG reductions of 50-65% relative to 2015 levels by 2030.
2. **Corporate:** Reduce GHGs in municipal operations by 40% by 2030. Across all corporate operations, strive to be 100% renewable and carbon neutral by 2050.

The following is an abbreviated list of actions that will lead to a 100% renewable city. Actions are categorized according to the four objectives which emerged from public feedback.

Objective: To significantly improve energy efficiency in buildings

1. Establish a financing mechanism for energy upgrades.
2. Complete comprehensive energy audits and retrofits of City-owned buildings and infrastructure.
3. Construct all new City buildings to Passive House and Zero Carbon Building Standards.
4. Support Passive House and Zero Carbon multi-story affordable housing developments.
5. Develop strategies to entice greater use of high efficiency heat pumps, thermal energy storage, solar PV, and other cleantech in both retrofits and new construction.
6. Increase collaboration with efficiencyPEI and the Province of PEI to encourage incentives for GHG reduction measures and technologies.

Objective: To greatly reduce energy use in transportation

7. Work with transit stakeholders to convert to four electric buses by 2022 and an entire electric fleet by 2030.
8. Work with partners to add at least 10 Level 2 electric vehicle (EV) chargers in Charlottetown by 2022.
9. Use incentives for installing at-home / public EV chargers. Help remove hurdles to EV adoption.
10. Update the City's entire corporate fleet of light vehicles to EVs between now and 2030-2035.
11. Continue to develop the City's mesh networking to improve connectivity and support smart city technologies.
12. Invest in traffic control technology to reduce idling and improve traffic flow in the city.
13. Reinvigorate the anti-idling campaign in the city and reassess the practicality of a bylaw.
14. Continue to monitor and expand the City's use of automated vehicle location fleet software.

15. Complete the Fitzroy Street bike lane per the City's 2018 Cycling Connectivity Report.
16. Investigate the potential of allowing low-speed biking on some sidewalks as done in other cities. Expand and connect dedicated cycling infrastructure and multi-use pathways.
17. Boost education campaigns for cycling and public transit to encourage multiple forms of mobility.
18. Demonstrate clean energy transport for City operations within the heavy-duty fleet.
19. Work with stakeholders to support switching transport to electric vehicles.

Objective: To transition to clean renewable energy

20. Work with the Province of PEI to explore developing more wind and solar capacity beyond current plans.
21. Increase the deployment and integration of renewable energies with smart technology and new market designs in the electricity sector.
22. Encourage a solar incentive program in the city.
23. Support private enterprise in the shift away from fossil fuels.
24. Examine the potential of large-scale cost-effective thermal storage of renewable energy.

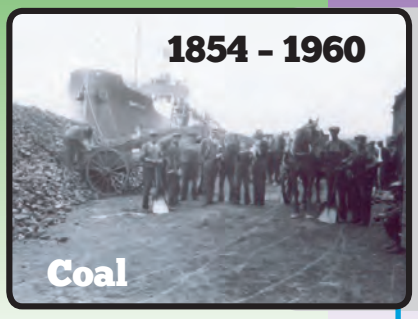
Objective: To foster sustainable community development

25. Support retraining of affected workers and training of the future workforce.
26. Invest in City staff capacity to implement this plan.
27. Incorporate a Green Procurement Policy with a life cycle assessment for the City of Charlottetown.
28. Incorporate measures and technologies into existing and new City zoning and development bylaws and relevant plans and strategies.
29. Develop and implement a corporate energy policy applicable to all City assets and services.
30. Improve data collection for tracking community energy, expenditures, and emissions.
31. Encourage greater residential and commercial density.
32. Support community bulk buys and neighbourhood approaches when practical to help reduce costs and fast-track the energy transition.
33. Collaborate with partners on the implementation of actions so they are as effective as possible.
34. Demonstrate low-carbon technology at all scales of City operations.
35. Continue implementing sustainability initiatives including those that help the private sector.
36. Promote common-sense approaches to waste reduction.
37. Foster entrepreneurship, innovation, and emerging technologies in the growing cleantech sector.
38. Ramp up community-driven climate resilience planning that strengthens City Planning and Climate Adaptation.

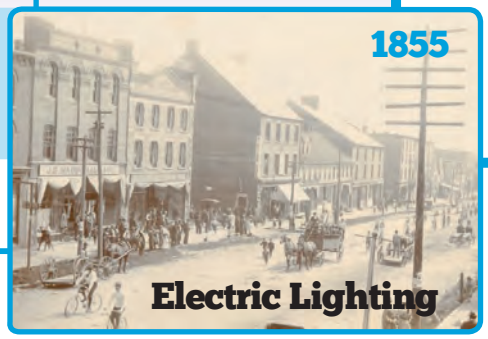
CHARLOTTETOWN

Charlottetown energy sources

At one time, people had to carry a whale oil lamp to see their way up a dark, muddy Queen Street because there were no streetlights to show the way. Coal for heat, a luxury not afforded to many, was delivered by horse drawn carts. These scenarios were the norm not so long ago, but since then, we've become accustomed to unwavering electricity at the flick of a switch and heat at the turn of a dial. Energy sources have evolved over time, but in recent years it has become increasingly clear that our reliance on fossil fuels is not sustainable. Fortunately, we're on our way to discovering the potential of clean, renewable sources like wind and solar to meet our energy needs.



Coal progressed from being exclusively a rich person's fuel to the most commonly used heat source on the Island over this time period. Wood burning was also a common way to generate heat.



Electric lighting came to the streets of Charlottetown, generated by coal-produced steam.

1960 Oil Heat

Many residents began making the switch from wood/ coal to oil heat.

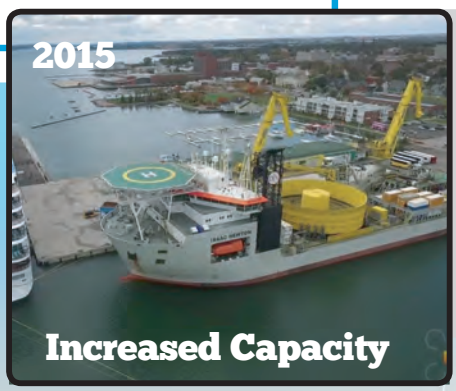
1977 Undersea Power Cables

As per the Comprehensive Development Plan, two 100 MW undersea electricity transmission cables from New Brunswick were acquired and leased to Maritime Electric.

PEI Energy Systems became operational in 1983 and remains an important contributor to Charlottetown's energy mix today. It uses 40% municipal solid waste, 40% biomass, and 20% oil to provide heat to about 150 buildings including the QEH and the Charlottetown Mall.

2015

The prevalence of oil heating systems declined in favour of more efficient options, such as high efficiency heat pumps. Heat pumps are becoming more mainstream and readily available.



The Sir Isaac Newton, anchored in the Charlottetown Harbour (left), was used to lay two 180 MW undersea electric transmission cables to eventually replace the previous ones.

2016 Wind Energy

More than 25% of the province's electrical needs were met by wind, the highest of any jurisdiction in North America. The Provincial Energy Strategy proposed a new 30MW wind project for 2019 and a further 40MW project in 2025. Charlottetown's CEP proposes expanding the wind energy capacity beyond those recommendations.

Key Highlights:

The infographic on the following page paints a picture of Charlottetown using 100% renewable energy in 2050.

- The City of Charlottetown's community end-use energy shifts from 25% electricity in 2015 to 89% in 2050.
- Increasing energy efficiency in buildings increases the city's GDP by $60 million per year for a decade.
- Ramping up energy efficiency retrofits could add an estimate of 526 10-year full-time jobs. Energy efficiency upgrades plus renewable energy installations could add the equivalent of 614 30-year full-time jobs.
- Quickly shifting to low energy buildings for new construction reduces energy demand and eliminates the need for expensive retrofits post construction.
- Most of the energy demand reduction results from electrification of heating and transport, mainly due to high efficiency heat pumps and electric vehicles.
- Air- and ground-source heat pumps provide heating and cooling; the former require only 25% of energy used by oil heating systems and the latter only 20%.
- Electric vehicles only need 25% of the energy conventional vehicles need to go the same distance.
- Solar and wind energy are clean sources that stabilize energy prices since the fuel costs are zero; energy price stability fosters stable economic conditions.
- Energy demand is reduced by 49%.
- Even with energy costs, delivery infrastructure, storage costs, and eventually excise tax, the community will see overall energy costs slightly lower than or similar to today's.
- The health and climate cost savings are substantial.

Conclusion

Charlottetown's transition to a renewable and carbon-neutral city will not happen overnight. Nevertheless, implementation of this Community Energy Plan will unlock many benefits including improved efficiency, fewer emissions, improved health and well-being, and significant climate benefits. On the economic front, benefits include growth and stability, increased jobs, and more affordable and stable energy pricing. In short, the city's shift will have significant benefits and relatively few downsides.

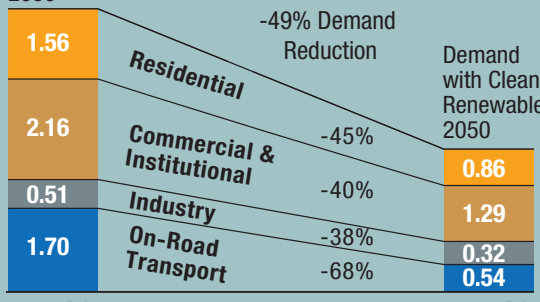
Charlottetown 2050

100% Renewable Energy for Homes, Businesses and Vehicles

CHARLOTTETOWN

Energy Demand

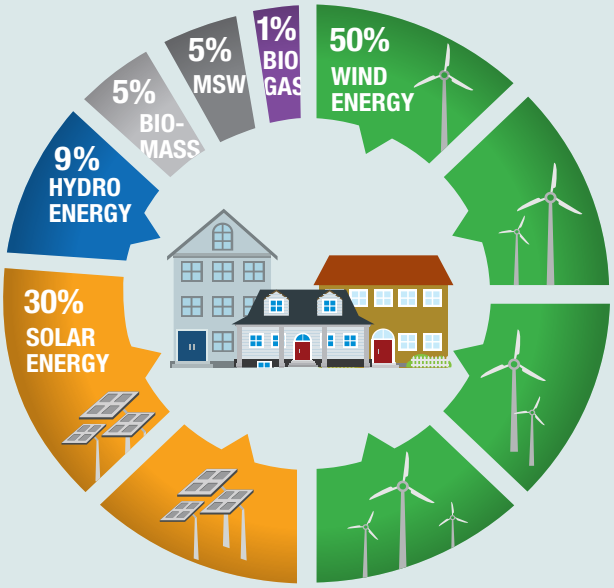
Business-as-usual demand 2050



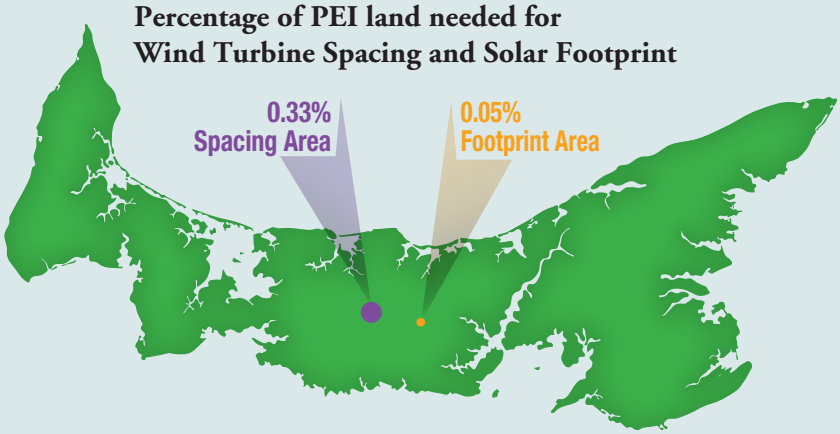
ENERGY COST SAVINGS: (Per Person Per Year) **$130**

ENERGY, HEALTH AND CLIMATE COST SAVINGS: (Per Person Per Year) **$5,630**

City of Charlottetown Projected Energy Mix - 2050



Percentage of PEI land needed for Wind Turbine Spacing and Solar Footprint



Job Creation

Energy Efficiency and Renewable Energy Jobs

614 30-Year Full-Time Jobs

INTRODUCTION

What is a Community Energy Plan?

A CEP is a tool to define community energy priorities with respect to improving efficiency, cutting emissions, and driving economic development. Though there is no standard approach to developing a CEP, it often contains community energy inventories and forecasts, energy and emissions reduction targets, target actions and timelines for implementation. Actions generally relate to:

- Energy efficiency in new and existing buildings
- Transportation and public transit
- Active transportation
- Low carbon vehicles and other transportation actions, including policies on anti-idling
- Waste, including landfill gas
- Renewable energy, district energy[1] and combined heat and power
- Water consumption
- Planning and policy measures
- Stakeholder outreach

This document contains a summary of the City of Charlottetown's community energy use and GHG emissions in 2015 as well as the energy, climate, and health costs associated with the City's energy use in this baseline year. It also provides the projected population and associated energy usage and GHG emissions from 2015 to 2050, if a business-as-usual approach is followed. A way forward to transition Charlottetown to a renewable city that is carbon neutral is outlined. And, finally, an overview of the implementation phase is provided.

Guiding the Way

This CEP is very beneficial to the city. It has helped the community to collaboratively establish targets and prioritize actions on energy and emissions. It also mobilizes stakeholders, policymakers and investors on an ongoing basis, giving them confidence in the community's commitment to act on energy and emissions.

CEP implementation can also help the community achieve several objectives at the same time, including goals related to economics, health, social well-being, resilience and the environment. Examples of these co-benefits include:

- Economic benefits from energy cost savings and local energy spending
- Reduced costs from local energy generation
- Increased savings from residential, commercial and industrial conservation programs
- Creation of jobs and keeping more dollars in the local economy
- Reduced costs from energy savings in transport
- Improved air quality, thanks to reduced energy demand, reduced energy consumption due to the use of electricity-powered heat pumps and electric vehicles, and reduced overall air pollution levels
- Health benefits including fewer doctor and emergency room visits, hospitalizations, reduced incidences of premature mortality because of improved air quality, and fewer lost work days and school days; leading to increased productivity and wages.
- Reduced obesity rates and increased longevity through active transportation improvements
- Social and resiliency benefits
- Energy maps to identify vulnerabilities
- Improved community access to reliable energy sources

1 District energy in the city is provided with a mix of approximately 40% waste-to-energy, 40% biomass, and 20% oil.

- Additional environmental benefits, including significantly reduced water use and water chemical pollution, avoidance of thermal pollution, reduced under-nutrition and fewer impacts on wildlife
- Reduced greenhouse gases (GHGs)
- Improved tree canopy through reforestation efforts

Quality Urban Energy Systems of Tomorrow (QUEST Canada), a solutions-oriented organization focusing on integrated community energy planning, maintains that if every Canadian community developed and implemented a CEP, GHG emissions would be reduced, urban air contaminants would be reduced, GDP would be increased, and jobs would increase. All very good reasons to implement this plan.

Energy and Sustainability

The City of Charlottetown initially developed an Integrated Community Sustainability Plan[2] (ICSP) in 2010 and most recently updated it in 2017. ICSP development was comprehensive in terms of public consultations, stakeholder meetings, surveys and staff meetings. This CEP is in direct response to one of the ICSP goals, namely:

> **"Create a community GHG emissions reduction strategy for the City of Charlottetown that includes setting and implementing long-term emission reduction targets at the corporate and community levels."**

The ICSP identified several themes: water; energy; transportation; food; healthy economy; infrastructure and the built environment; people and places; arts, culture and heritage; active healthy living; and nature.

The ICSP energy theme stated:

> **"Improving energy efficiency, converting to renewable energy sources and reducing our dependency on fossil fuels are key components to community sustainability, as heard throughout the public consultation process."**

Mitigating Climate Change

Global warming increases heat stress, disease, severity of tropical storms and cyclones, ocean acidity, and sea levels as well as the melting of glaciers, snow pack, and sea ice. Further, it shifts viable agriculture locations, harms ecosystems and animal habitats, and changes the timing and magnitude of water supply.

PEI climate change predictions include increased summer heat stress, warmer winters with less snow, new pests and diseases coming from the south, more frequent and severe storms, rising ocean acidity and sea levels, higher storm surges, more rapid coastal erosion and less winter sea ice. Shifts in agricultural production (e.g., what crops are viable), changes to forest composition, the eventual loss of some commercial and recreational fisheries, and other ecosystem biodiversity changes are also expected. There will also be changes to the timing and intensity of precipitation, with related impacts on soil erosion and water supply. Arnold and Fenech (2017)[3] provide a comprehensive overview of the expected climate change impacts here on PEI, and many recommendations to help the province better adapt to the effects of climate change.

2 City of Charlottetown Integrated Community Sustainability Plan (ICSP) 2017: https://www.charlottetown.ca/environment___sustainability/sustainability/sustainability_resources.

3 Arnold, S. and A. Fenech. (2017, October). Prince Edward Island Climate Change Adaptation Recommendations Report. University of Prince Edward Island Climate Lab. Charlottetown, Canada. Report submitted to the Department of Communities, Land and Environment, Government of Prince Edward Island, 172p. https://www.princeedwardisland.ca/en/information/communities-land-and-environment/climate-change-adaptation-recommendations-report

Locally and globally the effects of climate change are being witnessed and experienced first-hand, often with devastating consequences.

Limiting global warming through rapid and far-reaching transitions in energy across all sectors is critical to ensure a safe and sustainable world for everyone, now and in the future.

This CEP document is focused on climate change mitigation efforts, so that adaptation is more manageable.

The Paris Agreement[4] included the aim of strengthening the global response to the threat of climate change by "holding the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels."

The Intergovernmental Panel on Climate Change (IPCC) recently issued a Special Report on Global Warming of 1.5°C approved by governments.[5] The report finds that limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO_2) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050. This means that any remaining emissions would need to be balanced by removing CO_2 from the air (see Appendix A, page 47).

Limiting global warming to 1.5°C compared with 2°C will reduce challenging impacts on ecosystems, human health and well-being, making it easier to achieve the United Nations Sustainable Development Goals. The decisions we make today are critical in ensuring a safe and sustainable world for everyone, both now and in the future.

A key message that comes out very strongly from this report is that we are already seeing the consequences of 1°C of global warming through more extreme weather, rising sea levels, diminishing Arctic sea ice, among other changes.

What difference does 0.5°C of global warming make? Every extra bit of warming matters, especially since warming of 1.5°C or higher increases the risk associated with long-lasting or irreversible changes, such as the loss of some ecosystems. Limiting global warming gives people and ecosystems more room to adapt and remain below relevant risk thresholds. The report highlights a number of climate change impacts that could be avoided by limiting global warming to 1.5°C compared to 2°C, or more. For instance, the likelihood of an Arctic Ocean free of sea ice in summer would be once per century with global warming of 1.5°C, compared with at least once per decade with 2°C.

Planning at All Levels

All levels of government have a role to play in reducing GHG emissions through improving energy efficiency and increasing the use of renewable energy. The Governments of Canada and Prince Edward Island (PEI) are working within the Pan-Canadian Framework on Clean Growth and Climate Change.[6] It includes a Canadian target for GHG emissions to reduce 2005 levels by at least 30% by 2030.

At the provincial level, the PEI Climate Change Action Plan 2018-2023 mirrors that target: "Government together with residents, businesses, and industries, will reduce provincial GHG emissions by 30% below 2005 levels by 2030."[7] In addition, the province has signed a voluntary agreement with the New England Governors and Eastern Canadian Premiers to reduce provincial GHG emissions by 35-45% below 1990 levels by 2030.[8]

The City of Charlottetown applauds commitments made at the provincial and federal level, but it wants to push these commitments even further and challenge the community to reach beyond those targets. There are two main reasons for this ambition. First, the City can do its part in helping to meet global climate targets which, according to the international community, requires ratcheting up current commitments. Secondly, feedback

4 The Paris Agreement was adopted by 195 nations at the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015.

5 http://www.ipcc.ch/report/sr15/

6 See Pan-Canadian Framework on Clean Growth and Climate Change, 2016: https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html.

7 See: PEI Climate Action Plan 2018-2023 (2018): https://www.princeedwardisland.ca/en/information/communities-land-and-environment/climate-change-action-plan-2018-2023.

8 See: NEG/ECP Resolution 39-1 (2015): http://www.coneg.org/Data/Sites/1/media/39-1-climate-change.pdf.

received through the consultations and surveys used to develop this plan showed a consensus that Charlottetown should take greater action, beyond the current federal and provincial commitments to reduce GHGs.

Creating a Plan

The plan was designed to evaluate and demonstrate whether there are viable pathways to stimulate cleantech innovation, create jobs, and set conditions for sustained economic development while reducing GHG and air pollutant emissions. The main goal of the City's CEP is to address emissions in the energy sector. Development of this CEP followed a five-phase process (see **Figure 1**):

Figure 1: Five-Phase Development Process

Accessing Funds

In 2016, the City of Charlottetown joined the Federation of Canadian Municipalities (FCM) - Partners for Climate Protection (PCP) program. Jointly managed and delivered by the FCM and the International Council for Local Environmental Initiatives in Canada (ICLEI Canada), the program empowers municipalities to act on climate change through a five-phase process similar to the one used to create this CEP.

The FCM Municipalities for Climate Innovation Program (MCIP) is a five-year, $75 million program that helps municipalities prepare for, and adapt to, climate change, and to reduce GHG emissions. Funded by the Government of Canada, MCIP is available to all municipalities and their partners. The City of Charlottetown secured $99,900 in MCIP funding. In addition, it received $5,000 from efficiencyPEI, and $1,500 from Maritime Electric. The City committed $18,500 for this initiative.

With the additional funding from MCIP, the City of Charlottetown is able to complete its community inventory and develop an official GHG Emissions Reduction Plan. The City has a lasting commitment to reducing its GHG emissions with the aim of contributing to the province's emissions reduction target.

Getting Advice

In-kind voluntary contributions, valued in the amount of $40,000, were provided by approximately 30 supporters, who committed to assist with the CEP prior to beginning this project. Once the project began, the number of in-kind contributions grew. An expansive list of in-kind contributors is provided in the Acknowledgements section.

In addition to these generous supporters, the City established an Internal Advisory Team to guide CEP development. Team members are:

- **Ramona Doyle**, Sustainability Officer, and CEP Project Manger
- **Jessica Brown**, Sustainability Outreach Officer
- **Richard MacEwen**, Manager of Water and Sewer Utility, and Lead Technical Advisor
- **Betty Pryor**, Sustainability Projects Officer
- **Beth Hoar**, Parkland Conservationist
- **Tyler Veinot**, GIS Technician, and Lead Community Mapping Specialist
- **Matt McCarville**, Community Energy Planner

Resident Input

Early in the process of developing the plan, the City organized a Climate Change 101 presentation, delivered by Stephanie Arnold, a researcher at the UPEI Climate Lab. More than 50 members of the public attended this presentation. It was subsequently offered to staff and Council. A similar number of people attended a Community Energy Speaker Session, hosted by Mayor Clifford Lee, featuring presentations by Eddie Oldfield, CEO of Spatial QUEST, and Dr. Matthew Hall, Professor at the UPEI Faculty of Sustainable Design Engineering.

In late 2017 and early 2018, 300 community energy surveys were completed. In addition, two public consultations were held, with a total of 65-70 participants. Dozens of residents also provided their input directly to staff, increasing the public feedback. These activities resulted in the identification of several themes which formed the basis for this plan. The vision to shift to a sustainable energy future was subjected to a rigorous evaluation process.

The draft CEP was collaboratively reviewed online by many in-kind contributors who had a chance to offer subject-matter expertise, guidance, and insights across a range of areas, as described below. This review was followed by a technical advisory meeting with local subject-matter experts. Feedback from these two processes fed the second draft of the CEP, which was subsequently shared for feedback with a diverse range of stakeholders. The third iteration of this document was released for another round of public consultation.

The second round of public consultations demonstrated that residents and stakeholders are highly engaged in Charlottetown's energy future. Feedback that was collected online and in-person at the consultation

"The Community Energy Plan is a great blueprint for our City moving forward. My family has chosen to live and work in Charlottetown. As we raise our two young children, we are excited to see the City taking steps to reduce energy use in areas such as transportation and to support and encourage sustainable community development. Focusing on these important areas will help to ensure our city remains a great place to live for us, our kids, and our future grandchildren."

- Feedback from a Charlottetown Resident on the Draft Community Energy Plan

event suggest that there is considerable support for the Community Energy Plan's vision for Charlottetown in 2050 as a carbon neutral, diverse and economically strong community powered only by renewable energy. Overall, participants felt the community- and corporate-level targets and actions were appropriate. They shared creative ideas for how to achieve the CEP targets and actions, and offered constructive suggestions for how to improve upon the draft CEP.

Weighing Solutions

To evaluate the best way to achieve the vision, proposed energy-related solutions were assessed for their potential to reduce global warming and air pollutant emissions while simultaneously examining other environmental impacts. Technical feasibility and economic viability were also evaluated, including an assessment of factors such as securing reliable supplies of affordable energy, potential to increase long term energy price and economic stability, and job creation. A range of energy conservation and energy efficiency measures were evaluated side-by-side with energy supply choices. The assessment covered existing low-cost measures and technologies plus emerging cleantech across all energy sectors of the economy. Negative emissions measures and technologies were also examined in some detail. See Appendix B for the full list of measures and technologies examined.

Reviewing the Plan

The July 2018 CEP draft, which at the time was principally a technical document, was circulated to internal reviewers across the City's departments as well as to in-kind technical reviewers locally and abroad. The document was circulated to more than 50 reviewers resulting in many edits. These edits as well as some from a subsequent technical advisory meeting held at City Hall were incorporated into this final document.

Input from City management and staff was also factored into the CEP. For example, they provided important feedback on the targets and actions.

This process resulted in a list of targets and actions that reflects the community's values and desire to quickly reduce GHGs and shift to sustainable energy.

STEPS TAKEN

Even in advance of the Community Energy Plan, the City has taken a number of actions within its municipal operations to address GHG emissions and promote sustainability. Actions relating to City-owned assets, by year, include:

2015

- An energy efficiency coordinator was hired to conduct energy audits of the City's corporate facilities, oversee the implementation of audit recommendations and complete a corporate GHG emissions inventory.

2016

- Following an audit conducted at the City Works Garage, several improvements were made to reduce oil and electricity consumption, including: interior/exterior LED lighting, automated controls for the heating system and the installation of heat pumps in office spaces.

> **"Don't plan for meeting minimum standards! Pour resources into improving energy efficiency in existing buildings. Lead the country on this.**
>
> **Implement building codes that far supersede the national building code. By building Passive House buildings, we can significantly lower our residential and commercial energy usage."**
>
> *- Feedback from Charlottetown resident*

- Energy upgrades at the West Royalty Community Centre included heat-pump installation and attic insulation.

2017

- Automatic vehicle location was implemented in part of the City's vehicle fleet, reducing fuel costs, increasing productivity, and identifying new ways to cut GHG emissions.
- LED lighting retrofits were completed at City Hall, Simmons Arena and the Cody Banks Arena.
- Funding was secured through FCM, with financial support from efficiencyPEI, Maritime Electric, and the City to research and ultimately develop this CEP.
- An inventory of energy, expenditures, and GHGs for the City of Charlottetown's municipal operations was completed for the years 2013-2017.
- The Efficiency Coordinator transitioned into a Community Energy Planner role.
- Modifications were made to the anaerobic digestors at the Charlottetown Resource Recovery Facility to reduce methane leakage, a powerful GHG, and increase the usable methane for heating and process energy at the wastewater treatment plant.
- Several public transit improvements were made: bike racks installed on each of the several buses serving Charlottetown, Cornwall, and Stratford areas; buses are wheelchair accessible; 27 new bus shelters were added, including 15 in Charlottetown; free WiFi was made available on T3 buses; a free ReadyPass phone app was developed to help T3 riders have seamless, convenient commutes by allowing them to see where the buses are in real-time.
- Funding was awarded to the UPEI's School of Sustainable Design Engineering to research various opportunities relating to the transformation of the City's wastewater treatment plant to the Charlottetown Resource Recovery Facility.

2018

- Solar photovoltaic (PV) capacity (200 kilowatts) with seasonally adjustable racking was commissioned at the Miltonvale Wellfield and Booster Station; with an overall yield expected to double the energy output from the Jean Canfield Building's large solar PV system in Charlottetown.
- Requirements to electrify public transit were evaluated and an electric bus was demonstrated.
- MCIP funds were secured in the amount of $24,200 to complete a more comprehensive energy audit and structural assessment of the City Works garage, the largest source of emissions at any City-owned building, to identify measures to expand on the energy efficiency audit and retrofits to date at the facility in order to achieve deep GHG emission reductions. The City contributed $6,060.
- A sustainability research intern was hired to assist with a range of files – including community energy and GHG reductions – on a part-time basis.
- Measures are being taken to enhance the city's cycling culture and infrastructure.
- Lighting upgrades are complete at Queen and Fitzroy Parkades and partially complete at the Pownal Parkade.
- An LED retrofit is getting underway at the Police Station.
- To date, the City's free Showerhead Exchange Program has resulted in the installation of a few hundred low-flow showerheads with an estimated annual savings of 171 tonnes of CO_2, more than 12 million litres of water, and $77,000.

Miltonvale Wellfield and Booster Station

- 200 kW of new solar PV (photovoltaic) capacity added
- Installed two 100 kilowatt (kW) solar PV systems.
- Annual energy: 250,000 kWh
- Annual GHG savings: 150 tonnes CO_2

COMMUNITY ENERGY PROFILE

This section paints a picture of the community's 2015 energy profile constructed from a GHG emissions inventory; baseline energy usage; energy costs; and combined energy, climate and pollution costs. In 2015, Charlottetown's population was estimated at 37,200, slightly more than 25% of the province's official population estimate at that time.

Table 1: City of Charlottetown Greenhouse Gas Inventory, 2015

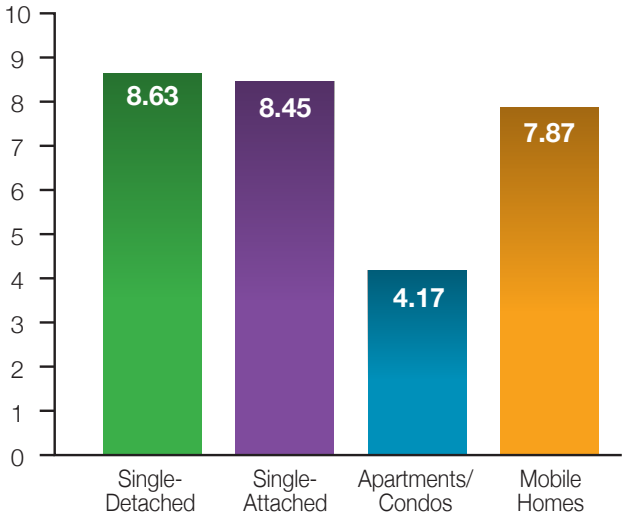
	Tonnes CO_2e
Residential	108,936
Commercial and Institutional	161,000
Industrial	35,286
Transportation	120,235
On-road	*100,051*
Off-road	*71*
Marine	*283*
Aviation	*19,830*
Waste	6,400
Landfill	*5,400*
Compost	*1,000*
Agriculture	170
Enteric Fermentation	*140*
Manure Management	*30*
Total GHGs	432,027
Per capita GHGs, Charlottetown	11.61
Per capita GHGs, PEI	15.53
Charlottetown % below PEI average	25%
Black Carbon (BC) Particles (tCO_2e)	24,000
Total tCO_2e (GHGs + BC)	**456,027**
Total Per Capita GHG + BC tCO_2e	**12.26**

Greenhouse Gas Emissions

The city's 2015 GHG inventory is discussed below in relation to residential, commercial and institutional, and industrial sectors as well as transportation, waste, and agriculture. A breakdown of the inventory is provided in **Table 1** on the left. It shows community-level GHG quantities by sector and subsector. The following provides some detail relating to the inventory table.

With respect to residential, there were an estimated 16,110 occupied dwellings. Urban areas generally benefit from greater density in the built environment which often reduces GHGs associated with space heating and transportation. Charlottetown's GHGs were lower than the province's due to the city having a higher percentage of households which are apartments and condominiums (41.1% vs 18.7%). While floor space in an apartment/condo averages more than half that of a typical single detached dwelling on PEI, the average overall energy use in them was less than half in comparison. In total, residential sector GHG emissions contributed an estimated 108,936 metric tonnes of carbon dioxide equivalent (tCO_2e), a per household average of slightly less than 6.76 tCO_2e. Average GHG emissions by household type are shown in **Figure 2**.

Figure 2: Average GHG Emissions by Household Type, 2015



The high proportion per capita commercial and institutional space in the City, compared to the rest of PEI, increased the City's per capita energy use and GHGs (161,000 tCO_2e) in the sector. The industrial sector GHG production was 35,286 tCO_2e.

The transportation results were broken down into four sectors, with on-road transport producing the highest level of GHGs (100,051 tCO_2e) followed by aviation (19,830 tCO_2e), marine[9] (283 tCO_2e) and off-road transport[10] (71 tCO_2e).

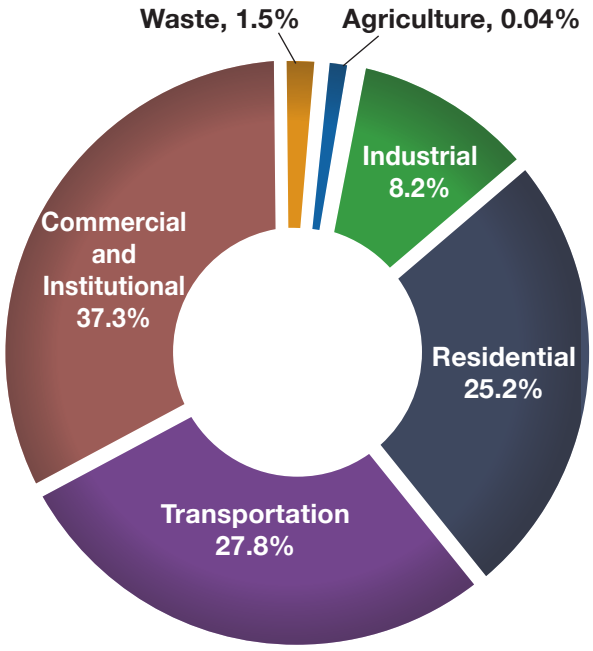
With respect to GHGs from municipal solid waste (MSW), city emissions per capita appeared less than the province's, largely because much of the Capital Region's MSW is burnable and therefore sent to the District Energy System (DES), thus reducing the amount that is landfilled and reducing landfill GHGs.

Agriculture-related GHGs were estimated at less than 0.1% of the city's emissions, whereas 20.3% of the province's GHGs were attributed to agriculture. Nevertheless, it is important to acknowledge the community's responsibility in reducing the carbon footprint associated with our diets by making informed choices. Low-carbon dietary choices can be healthy, affordable, and taste good.

Overall, in 2015, city GHGs were estimated at 432,000 metric tonnes of carbon dioxide equivalent ($tC0_2e$); that is 11.61 $tC0_2e$ per capita. This amount is approximately 25% below the estimate of PEI's GHGs, 15.53tCO_2e per capita, when including GHGs from "stack emissions" associated with PEI's electricity imports. These electricity import-related emissions are excluded in PEI's GHG inventory. Since all electricity-related emissions are typically included in municipal-level GHG inventories in Canada and around the world, estimating the GHGs from stack emissions associated with PEI's electricity imports allowed for a better apples-to-apples comparison.

In addition to all GHGs, the city's figure included a small amount of additional warming resulting from emissions in the upper atmosphere including heat-radiating fossil soot particles, due to commercial aviation attributable to Charlottetown. Though warming relating to black carbon (BC) particles is usually excluded in inventories, it is factored in here as it is relevant to reducing warming. The 100-year global warming potential ($GWP_{100\text{-}yr}$) of BC attributable to all fuels across the city after aviation was estimated at about 24,000 tCO_2e. This addition brings the city's total $GWP_{100\text{-}yr}$ to 456,000 tCO_2e or 12.26 tCO_2e per capita.

Figure 3: Greenhouse Gas Emissions by Sector, 2015



Note – **Figure 3** includes the GHGs for black carbon emissions as calculated in the transport sector of Table 1. For more information, see the full report as mentioned in reference 14 on page 23.

The City of Charlottetown's community GHG emissions are shown as a percentage by sector in **Figure 3**.

More details on the city's GHG emissions estimates can be found in the City of Charlottetown's 2015 Community Energy and Greenhouse Gas Inventory Report.[11]

9 Primarily includes sea-doos, small yachts or sportfishing boats, and auxiliary engines of sailboats.

10 Includes estimates for all lawn mowing, golf carts, farm tractors, and snowmobiles, etc.

11 See full report, City of Charlottetown's Community Energy and Greenhouse Gas Inventory Report for 2015: https://www.charlottetown.ca/environment___sustainability/sustainability/programs_and_initiatives/community_energy_plan.

Setting a Baseline

The City established a 2015 baseline of energy use. **Table 2** shows estimates of Charlottetown's community-level energy quantities in natural units and gigajoules (GJ).[12]

Table 2: City of Charlottetown Community Energy Use by Source, 2015

	Natural Units		GJ	tCO_2e
Electricity	370,172,517	kWh[13]	1,332,622	141,881
District Energy	100,082	MWh	359,301	24,042
Fuel Oil	48,278,170	L	1,867,400	132,041
Gasoline	32,286,468	L	1,130,026	74,231
Diesel	9,667,312	L	370,258	26,338
Propane	3,695,275	L	93,527	5,706
Aviation Fuel	3,780,000	L	131,121	19,830
Wood	4,277,178	kg	54,723	812
Biogas	624,131	m^3	14,556	576
Total			**5,353,533**	**432,027**

More details on the City's energy use can be found in the City of Charlottetown's Community Energy and Greenhouse Gas Inventory Report for 2015.[14]

The Cost of Energy

Community energy expenditures in 2015 were estimated at $176 million (expressed in CAD 2017). Those expenditures are broken down by secondary energy sources[15] in **Table 3**.

Table 3: City of Charlottetown Energy Expenditures, 2015

	$Millions Nominal CAD 2015	$Millions CAD 2017
Electricity	$62.3	$64.3
Oil	$42.6	$44.0
Gasoline	$34.6	$35.7
Diesel	$11.1	$11.4
District Energy	$11.6	$12.0
Aviation Fuel	$4.3	$4.5
Propane	$2.9	$3.0
Wood	$1.0	$1.0
Total Expenditures ($M)	$170.4	$176.0

Tallying the Social Costs

Energy services offer society tremendous benefits. Yet these services have significant externalized social costs. There are ways to lessen the social costs by increasing energy efficiency and incorporating clean energy, providing the same quality energy services we enjoy today at similar costs, but with greater overall net benefits to our community and society.

12 A gigajoule is 278 kWh; 1,000,000 GJ = 1 PJ.

13 One kWh of energy = 1,000 watts of power used for an hour.

14 See full report, City of Charlottetown's Community Energy and Greenhouse Gas Inventory Report for 2015: https://www.charlottetown.ca/environment___sustainability/sustainability/programs_and_initiatives/community_energy_plan.

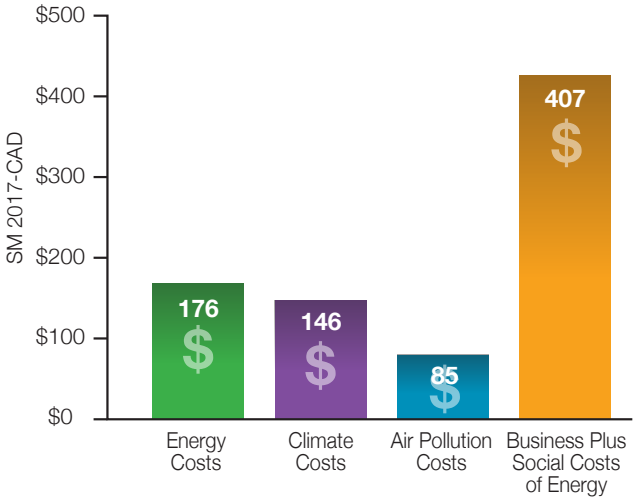
15 Secondary energy sources like refined gasoline, and diesel, are derived from a primary energy source like crude oil. Similarly, electricity is a secondary energy source, and primary its energy sources include wind, sun, and water.

Long-term global warming damages from the City's GHGs in 2015 were estimated at $146 million. Chronic exposure to air pollution causes illness and death. In Charlottetown, an estimated seven mortalities each year are associated with air pollution, with the social costs of morbidity and mortality estimated at $85 million.

The City's energy, climate, and air pollution costs associated with energy use today, as shown in **Figure 4**, were estimated in 2015 at $407 million/year (CAD 2017). The methods for calculating these costs can be found in the Supplemental Information section of the City of Charlottetown's 2015 Community Energy and Greenhouse Gas Inventory Report.[16]

The global warming damage costs to the world are known as the global social cost of carbon[17] (SCC). Global-SCC estimates are an attempt to quantify the externalized damage costs which are associated with GHG emissions. The global-SCC is estimated to be $417 USD ($177-$807) per tonne of CO_2, according to a September 2018 study published in Nature Climate Change.[18] Charlottetown's global-SCC estimate of $320/t$CO_2$e (CAD 2017) is within this range and could be used as a reasonable value.

Figure 4: City of Charlottetown Energy, Climate, and Air Pollution Costs, 2015



16 See full report, City of Charlottetown's Community Energy and Greenhouse Gas Inventory Report for 2015: https://www.charlottetown.ca/environment___sustainability/sustainability/programs_and_initiatives/community_energy_plan.

17 The global social cost of carbon (global-SCC) is a term used to describe an estimate of the monetary value in a given year of worldwide damage that will occur over the coming decades and centuries from emitting one additional tonne of carbon dioxide or equivalent greenhouse gas emissions.

18 Ricke et al., Country-level social cost of carbon, Nature Climate Change, vol. 8, p.895–900 (2018). https://www.nature.com/articles/s41558-018-0282-y.

Students on board with public transit

To increase the number of students using public transit to get to school, work and recreational activities, the City of Kingston gave out free bus passes. When that didn't do the trick, they launched a transit orientation program to familiarize students with the system, teach them about the environmental benefits, show them the cost savings from riding the bus rather than owning and operating a car, and highlight how public transit increases their freedom to get from place to place. Students are now on board! Students took nearly 600,000 public transit bus trips between September 2016 and August 2017 alone – a staggering increase from 30,000 trips in the project's first year.

Business-as-Usual Projections

The City of Charlottetown used recent provincial population projections to develop a business-as-usual (BAU) 2015-2050 projection of population, energy use, and GHG emissions for the community. BAU involves incremental changes such as modest energy efficiency and conservation measures, and slow uptake of cleantech like electric vehicles, rather than taking steps to ensure a more rapid energy transition.

The province's population projections for 2017-2056 were used to help develop population projections for the City of Charlottetown. Based on the data from the province's projection, and municipal and provincial population trends, Charlottetown's population is expected to increase by roughly 47% between 2015 and 2050, as shown in **Figure 5**.

Despite the 47% population increase, with BAU in 2050 the city's energy usage is projected to be only 12% higher than in 2015. This trend is depicted in **Figure 6**.

As **Figure 7** shows, community GHGs (including black carbon particle emissions) amounted to roughly 456,000 tCO_2e in 2015. With a BAU approach, GHGs in the City could increase to greater than 500,000 tCO_2e/year in 2025, before falling back to 2015 levels around 2040, and eventually reaching about 402,850 tCO_2e/year in 2050.

Potential reasons for shortfalls in meeting GHG reduction targets under BAU could stem from a lack of coordinated policies by municipal, provincial, and federal governments coupled with population growth and/or a lack of community-level buy-in to reduce GHG emissions. Ambitious climate change mitigation plans will help the city to do its share in limiting global warming as much as possible.

Figure 5: City of Charlottetown Population Projection, 2015-2050

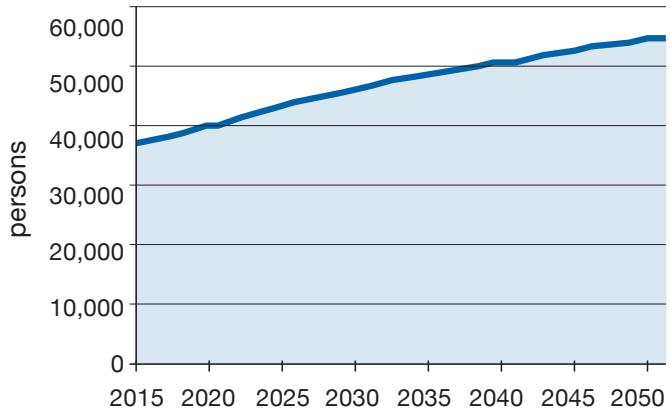


Figure 6: City of Charlottetown BAU End-Use Energy, 2015-2050

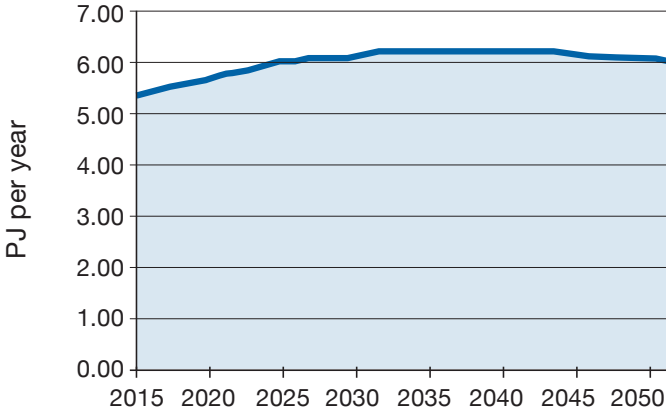
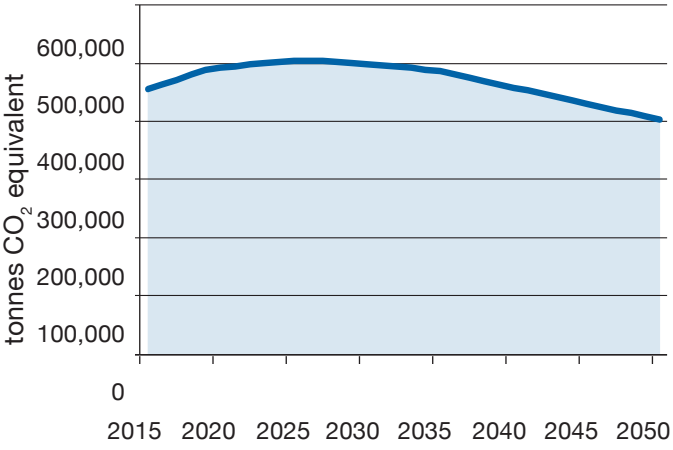


Figure 7: City of Charlottetown BAU GHGs



Warming from GHGs plus BC particles is expressed in tCO_2e.

Evaluating Measures and Technologies

As part of the development of this CEP, a comprehensive review was undertaken to evaluate proposed energy-related climate change solutions. First, measures and technologies were evaluated primarily in terms of their ability to minimize global warming and air pollution mortality, while considering other impacts of the proposed solutions, such as on land and water use, wildlife, resource availability, thermal pollution, water chemical pollution, and other environmental effects.

Secondly, combinations of the evaluated measures and technologies were examined in some detail with respect to whether they could provide energy security, ensure reliable affordable energy, increase economic and energy price stability, and create jobs.

There is consensus that society is moving towards an electricity-powered world.[19, 20] The economic, technical, ethical and social issues entangled with nuclear technologies and the unexpectedly fast expansion of renewable energies (largely wind and solar) point to an increasingly important role of the latter in electricity generation.[21]

An extensive evaluation process revealed many pathways (uses of measures and technologies and combinations of such) to 100% use of renewables in all energy sectors are technically obtainable and economically viable. In support of this revelation, a recent analysis of 60 scientific studies examining the replacement of fossil fuel energy sources with renewable energy (primarily wind and solar) concluded:

> **"the 100% renewable energy scenarios proposed in the literature are not just (technologically) feasible, but also (economically) viable.[22]"**

The evaluation resulted in more than 80 measures and technologies (see list at Appendix B) which the City of Charlottetown could use to help transition its energy infrastructure. These items are seen as either vital or possible elements of Charlottetown's transition to sustainable energy. Many options on this non-exhaustive list are cost-effective or becoming mainstream; almost all of them are available today, the rest of which are being designed. Ongoing research and evaluation will maximize the ability to capitalize on emerging opportunities.

19 Jacobson, M.Z., and Delucchi, M.A., "A path to sustainable energy by 2030," Scientific American, 2009.

20 Armaroli, N., and Balzani, V., "Towards an electricity-powered world," Energy and Environmental Science, pp. 4, 3193-3222, 2011.

21 Ibid.

22 Brown et al., Response to 'Burden of proof: A comprehensive review of the feasibility of 100% renewable-electricity systems', Renewable and Sustainable Energy Reviews, vol.92, September 2018, p.834-847. https://doi.org/10.1016/j.rser.2018.04.113.

THE WAY FORWARD

A glance back in time to Charlottetown 100 years ago, with horse drawn carriages on the streets and homes without electricity, illuminates the certainty and the constancy of change. The way we use energy, and the sources of energy we use are always evolving and improving based on new technology. We are now at a point in history where we have the knowledge and technology to harness clean renewable energy on a large scale, and doing so has become an immediate necessity. The good news is that the City of Charlottetown is well-positioned to progress on the path of innovation toward a much brighter future for all and this Community Energy Plan helps lights the way forward.

Fossil fuels can no longer be relied upon to provide the benefits they have in the past. The City can either postpone action and play catch-up at a later date, or act now to enhance quality of life, improve equity and make Charlottetown more economically strong. The choice is clear.

This section offers a community vision for a sustainable energy future for the City of Charlottetown, based on extensive public consultations, stakeholder input, subject-matter expert feedback and rigorous evaluation. It includes a scenario which paints a picture of a fully renewable and carbon neutral Charlottetown in 2050.

The targets and actions contained in this section can facilitate efforts within households, businesses, and all levels of government and foster collaboration to accelerate the shift to a clean energy economy.

Community Vision for Sustainable Energy

Charlottetown aims to quickly reduce community GHG and air pollutant emissions while securing reliable affordable energy locally, increasing efficiency energy, and creating jobs and economic growth. The City envisions exceeding current targets for 2030 and transitioning all energy for homes, businesses, cars, and trucks to clean, renewable sources before 2050. In short, the City's vision is:

> **"By 2050, Charlottetown is a carbon neutral, diverse and economically strong community, powered only by renewable energy."**

Though this vision sets a general direction for the community's energy transition, it is reasonably flexible with respect to timing and to the specific mix of renewable or clean measures and technologies used.

Which type of heating is more efficient, heat pumps or oil?

Ground- and air-source heat pumps require only 20-25% of the energy needed by average oil heating equipment, respectively. With wind energy nearly doubling in the winter, heat pumps are the eco-friendly way to go. efficiencyPEI offers great rebates.

There are many pathways to reach these overarching goals. To achieve this community vision, the following objectives were set:

Significantly Improve Energy Efficiency in Buildings

- Retrofit existing buildings
- Encourage efficient new buildings
- Encourage a shift to electricity-powered heat pumps, LED lighting, etc.

Greatly Reduce Energy Use in Transportation

- Encourage walking, cycling, transit culture/ infrastructure
- Switch on-road and off-road ground transport to electricity
- Encourage electric vehicle charging infrastructure

Transition to Clean Renewable Energy

- Create a smart city with the integration of electricity, heat, transport and industrial sectors
- Fuel-switch to electricity, increase renewable electricity supply and its integration
- Encourage energy storage for heat and cold, in the transport sector, with grid batteries and other clean energy storage technologies

Foster Sustainable Community Development

- Encourage energy innovation and emerging technologies; the City should lead by example
- Significantly increase social marketing opportunities for education and awareness
- Plan for greater density and mixed land use; preserve heritage in energy retrofits
- Secure economic benefits from reduced energy use
- Seek affordable energy for residents and businesses at similar or reduced costs
- Increase energy price stability for sustained conditions for economic growth
- Communicate benefits in terms of job creation
- Communicate the social costs of GHG and air pollutant emissions, and the value or benefits of reducing these costs.

Appendix E has links and resources which illustrate the viability of various pathways to a renewable city.

TARGETS

The overall community and City energy-related and GHG emission reduction targets are:

1. **Community:** Adopt the City of Charlottetown CEP and transition to a 100% renewable and carbon neutral city by 2050 at the latest, with GHG reductions of 50-65% relative to 2015 levels by 2030.
2. **Corporate:** Reduce GHGs in municipal operations by 40% by 2030. Across all corporate operations, strive to be 100% renewable and carbon neutral by 2050.

The following actions which will lead to a 100% renewable city are categorized according to the objectives which emerged from public feedback.

Objective: To significantly improve energy efficiency in buildings

1. **Establish** a financing mechanism, such as the Property Assessed Clean Energy (PACE) program, for energy upgrades. PACE programs provide financing for energy efficiency retrofits – including building envelopes, lighting improvements, installations of high efficiency heat pumps – and solar photovoltaics (PV). A financing mechanism such as this could help low-income households, for example, to access the upfront capital outlay necessary to access rebate programs and complete cost-effective energy improvements that reduce GHGs. Begin planning for PACE programming in 2019-2020 either in collaboration with the Province of PEI or through the Water and Sewer Utility. If warranted, the program will be expanded in subsequent years.
2. **Complete** comprehensive energy audits and necessary retrofits of all City-owned buildings and facilities, including the Water and Sewer Utility and street lighting. Seek financial assistance to complete retrofits. Work will commence as soon as possible with the aim of being completed by 2022.

Affordable and energy efficient social housing

Karen's Place, a 42-unit affordable housing complex in Ottawa for those with mental health conditions, meets the Passive House standard - and does so on a shoestring budget. These buildings are so energy efficient the units only cost $30 annually to heat. Over the lifetime of the complex, the total costs of building to the Passive House standard are far less than for those built cheaply. Marrying affordable housing with environmental sustainability to address the needs of vulnerable groups is a win-win-win.

3. **Construct** all new municipally-owned buildings to Passive House and Zero Carbon Building Standards.
4. **Support** a Passive House and Zero Carbon affordable housing multi-story development in Charlottetown that will serve as a demonstration. Collaborate with stakeholders from Charlottetown's Affordable Housing Incentive Program, the Canada Mortgage and Housing Corporation's National Housing Strategy, PEI's Provincial Housing Action Plan, and the Province of PEI's Climate Change Action Plan.
5. **Develop** a strategy for using high efficiency heat pumps, thermal energy storages, and solar PV in retrofits as well as new commercial and residential buildings. Create incentives for meeting new Passive House and Zero Carbon standards. Work with stakeholders to build capacity such that all new buildings are constructed to Passive House and Zero Carbon Standards by 2030 or sooner.
6. **Increase** collaboration with efficiencyPEI and the Province of PEI to encourage incentives for technologies; collaborate with efficiencyPEI to educate and raise public awareness around energy efficiency and its benefits.

Objective: To greatly reduce energy use in transportation

7. **Collaborate** with T3 Transit as well as municipal, provincial, and federal partners, to transition to electric buses by 2030, with the interim goal of four e-buses by 2022.
8. **Work** with partners to add at least 10 Level 2 electric vehicle (EV) chargers in Charlottetown by 2022. Encourage the use of Open Protocols for all EV charging infrastructure.
9. **Use** incentives for installing at-home and public EV chargers to encourage individuals, families and businesses to be early adopters of EVs. Work with stakeholders to encourage dealer access, service locations and financial incentives for EVs.
10. **Update** the City's corporate fleet of light vehicles to EVs. Strive to have at least five light-duty EVs by 2020. By the 2022-2023 fiscal year, aim to have most new light vehicles purchases, including pickup trucks and vans, be electric. Strive for the City's full fleet of light vehicles to be electric by 2030-2035.
11. **Continue to develop** the City's mesh networking technology to improve connectivity and support smart cities technologies.
12. **Invest** in traffic control technologies to reduce idling and improve the flow of traffic in the city to reduce GHG emissions.
13. **Reinvigorate** the City's anti-idling campaign and reassess the practicality of a bylaw.
14. **Continue to monitor** the City's fleet using automated vehicle location software and invest in new emerging opportunities to further improve efficiency. Communicate the benefits to other fleet managers across the community.

Charlottetown transportation

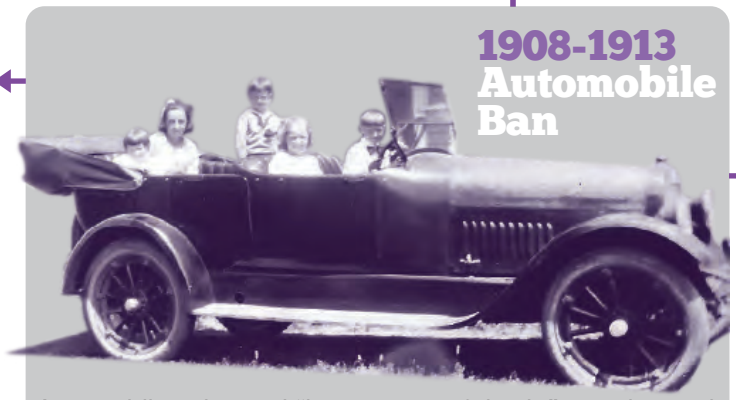
CHARLOTTETOWN

Not so long ago, folks had to hitch up their favourite horse to travel to a neighbouring community. Gas-powered vehicles were seen as an unwelcome advancement on a well-established way of life. Innovation in the transportation sector was a major driver of change in our society back then - and it still is today. We are now faced with the tough realization that the convenience with which we've been able to travel has a much greater cost than what we pay at the pumps. Luckily, the transportation sector keeps us moving forward in more ways than one.

The PEI Railway was constructed, dramatically changing the transportation sector.

Cycling was a very popular form of transportation, with road races being the first sporting rivalries between communities.

The PEI Railway officially closed and the rail lines were converted to "Rails to Trails" multi-use trails.



Automobiles, deemed "instruments of death," were banned, making international headlines. Even after it was repealed in 1913, 90% of Islanders voted to keep the ban in place.

In a contentious vote in 1988, 54.5% of Islanders favoured construction of a fixed link to the mainland.

The City of Charlottetown received approval for 50% of the costs of developing an east-west cycling lane in the downtown area to be funded through the federal Municipal Gas Tax Fund.

2016 Transit

T3 Transit had record-breaking ridership year, recording 553,000 passengers, a 13% increase from the year before.

A Regional Active Transportation Plan for the Greater Charlottetown Area recommended a number of improvements to cycling conditions in Charlottetown.

2018 Electric Vehicles

Electric cars are becoming mainstream. The provincial government aims to establish electric vehicle fast-charging stations across the Island.

T3 Transit, with the help of the municipalities of Charlottetown, Cornwall, and Stratford, test-drove an electric "zero emissions" bus for a week-long pilot demonstration.

15. **Seek** financial assistance to complete a dedicated bike lane on Fitzroy Street per recommendations in the City's 2018 Cycling Connectivity Report. The lane would interconnect the City's major cycling arteries, linking communities in and around Charlottetown with the downtown core – from households to workplaces/businesses and to Victoria Park.
16. **Investigate** the potential of allowing low-speed biking on some City sidewalks. This approach, used in many urban areas, fosters cycling, promotes safety, and reduces the costs of multiple forms of transport infrastructure. The City will work to continue expanding and connecting networks of dedicated cycling infrastructure and multi-use pathways.
17. **Enhance** education campaigns for cycling and public transit to encourage multiple forms of mobility. The campaigns should reach a spectrum of audiences including youth at school.
18. **Demonstrate** clean energy transport for City operations within the heavy-duty fleet. Seek heavy-duty EVs or hydrogen fuel cell-electric hybrids.
19. **Work** with key stakeholders to support the switch from fossil fuel-based transportation to electric vehicles.

Objective: To transition to clean renewable energy

20. **Work** with the Province of PEI to explore opportunities to install more wind and solar capacity than is currently planned.
21. **Increase** the deployment and integration of renewable energies with smart technology and new market designs in the electricity sector. Such efforts enable innovation and reduce GHG emissions quickly at low cost.
22. **Encourage** a solar incentive program in the city. Work with stakeholders, including other municipalities, to encourage the province to introduce financial incentives and more favourable policies for solar photovoltaics.
23. **Support** private enterprise in its transition away from fossil fuels.
24. **Work** with stakeholders to examine the potential of cost-effective large-scale thermal storage of wind and solar energy.

How much more efficient are electric cars than gasoline or diesel cars?

Electric cars are 80% efficient; they need only one-quarter of the energy to travel the same distance as gas or diesel cars.

CHARLOTTETOWN RESIDENT, MIKE KENNY'S NISSAN LEAF EV PARKED ON VICTORIA ROW

Objective: To foster sustainable community development

25. **Support** educational institutions in training workers affected by the transition to renewable energy. Work with stakeholders, including educational institutions and provincial and federal governments, to ensure supports are in place to facilitate a just, equitable transition (e.g., rights of workers and communities are respected, and vulnerable groups are looked after).
26. **Invest** in City staff capacity to implement this plan.
27. **Develop** a green procurement policy for the City of Charlottetown and implement it across all City departments, incorporating life cycle costing into all purchases.
28. **Incorporate** identified measures and technologies into existing and new City zoning and development bylaws, the City's Official Plan and all relevant strategic plans.
29. **Develop** and implement a corporate energy policy applicable to all City facilities and services.
30. **Improve** data collection to provide more accurate estimates of community energy, expenditures, and emissions. Develop and implement methodologies to help monitor progress on the city's community energy transition and GHG reductions and to report to the public on progress. Encourage a voluntary energy benchmarking program.
31. **Encourage** greater residential and commercial density, including through mixed-use development to entice more walking and cycling. Explore ways to encourage more density and affordable housing developments along public transit routes.
32. **Support** community bulk buys and neighbourhood approaches when practical to enhance efficiency improvements, heat pump and solar installations, EV adoption, EV charger installations and more. This approach can reduce costs and accelerate the energy transition.
33. **Collaborate** with Holland College's Energy Systems Engineering Technology Program, other Holland College programs, the UPEI School of Sustainable Design Engineering, and all stakeholders to help the City fine tune the implementation of its actions so they are as effective as possible.
34. **Demonstrate** low-carbon technology at all scales of City operations, including clean energy for grilling at events, electric lawn care and property maintenance in selected locations.
35. **Continue** implementing the ICSP, the Regional Active Transportation Plan for the Greater Charlottetown Area, and environmental sustainability initiatives in support of the private sector. Modify and expand on these as necessary.
36. **Promote** common-sense approaches to waste reduction that minimize related GHGs: reduce, reuse, recycle. Businesses can be proactive in terms of waste reduction and consumers can choose to support the ones that are.
37. **Foster** entrepreneurship, innovation, and emerging technologies within the growing cleantech sector, including: smart technology, thermal energy storage technologies for heat and cold, grid batteries, smart EV charging, vehicle-to-grid technology, fuel cells and their related infrastructure.
38. **Ramp up** community-driven climate resilience planning by engaging the community and partnering with key stakeholders like the electric utility.

100% Renewable Energy

This Plan summarizes energy conservation, energy efficiency, and electricity plus direct heat technologies (listed in Appendix B of this document) to transition all Charlottetown's energy to clean, renewable sources. The residential, commercial and institutional, industrial, and on-road transportation sectors account for 97.5% of the energy use shown in the 2015 Community Energy and Greenhouse Gas Inventory. Therefore, the following analysis focuses on these sectors. An infographic showing one of many possible scenarios for Charlottetown's 100% renewable energy picture in 2050 can be found on the facing page.

Reduced Energy Demand

By increasing energy conservation, energy efficiency measures, and transitioning to 100% renewable energy for all purposes across these sectors as shown in this scenario, an end-use energy demand reduction of 49% is attainable.

Table 4 shows the end-use energy demand across the four main sectors, showing the amounts for the 2015 baseline, the projected 2050 BAU results, the projected 2050 100% renewable energy results and the overall demand reduction.

Table 4: End-Use Energy by Sector, 2015 and 2050 Business-as-Usual Versus 100% Renewable Energy Scenario

	2015 Baseline PJ	2050 BAU PJ	2050 100% RE PJ	2050 Demand Reduction
Residential	1.37	1.56	0.86	45%
Commercial and Institutional	1.90	2.16	1.29	40%
Industrial	0.45	0.51	0.32	38%
On-road Transportation	1.49	1.70	0.54	68%
Totals	**5.22**	**5.93**	**3.00**	**49%**

By 2050, the residential sector can reduce end-use energy demand by 45% relative to BAU by transitioning to clean, renewable energy. The commercial and institutional (C&I) sector can see a reduction in end-use energy of 40% compared to BAU by transitioning to renewables.

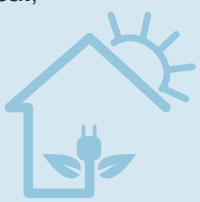
Existing and new building transitions are modeled separately. Many of the buildings in 2030 and 2050 projections already exist today. Each end-use is examined in detail to determine the potential for efficiency and conservation measures such as air sealing, insulation, new windows and doors, efficient lighting and appliances, etc. Then existing heating sources, aside from buildings using district heating, are electrified (discussed below).

It is assumed both residential and C&I floorspace will increase by 25% by 2030 and 47% by 2050. From 2015-2030, new buildings are assumed to be at least 50% more energy efficient than the existing building stock, which includes some very inefficient old buildings. Between 2030 and 2050, new buildings could be at least 80% more energy efficient than existing ones.

For space conditioning, a combination of high-efficiency heat pumps can provide most of the heating and cooling needs. In some cases, low-cost thermal storages will be used with heat pumps. Some standard electric heating can use some form of low-cost thermal storage to integrate wind and solar. In the C&I sector, efficiency measures include LED lighting; energy

Which emits more fine particulate matter: oil boilers, wood pellet heating systems or EPA certified wood stoves?

Wood pellet and EPA certified woodstoves emit about 100-400 times the fine particles (PM2.5) as oil heating systems. Electric heat, such as that provided by high-efficiency heat pumps would help to improve urban air quality significantly and reduce climate change.



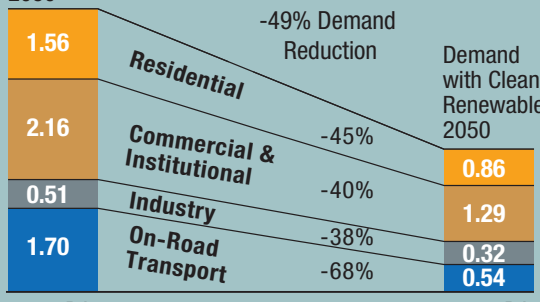
Charlottetown 2050

100% Renewable Energy for Homes, Businesses and Vehicles

CHARLOTTETOWN

Energy Demand

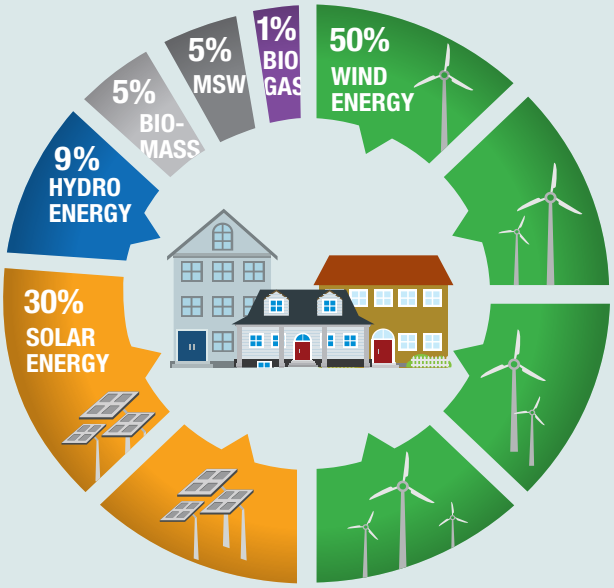
Business-as-usual demand 2050



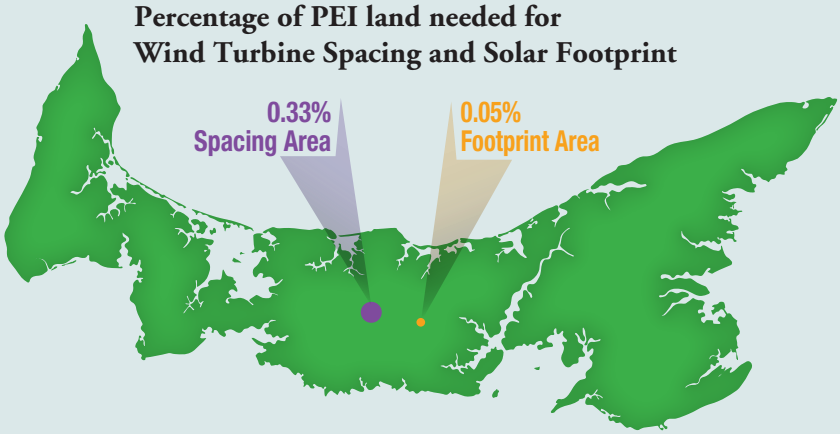
ENERGY COST SAVINGS: (Per Person Per Year) **$130**

ENERGY, HEALTH AND CLIMATE COST SAVINGS: (Per Person Per Year) **$5,630**

City of Charlottetown Projected Energy Mix - 2050



Percentage of PEI land needed for Wind Turbine Spacing and Solar Footprint



Job Creation

Energy Efficiency and Renewable Energy Jobs

614 30-Year Full-Time Jobs

efficiency retrofits of existing buildings to improve insulation, air tightness, efficiency of windows and doors, and other measures. For water heating, heat pump water heaters can be used.

Minimum Code Compliant Home vs. Passive Low Energy Home

A PEI Home Case Study compares a Minimum Code[23] Compliant Home (MCH) that uses heating oil, to a Passive Low Energy Home (PLE), designed using the Passive House Planning Package. The findings show that the average increase in initial cost for a PLE over MCH in PEI is 10% to 20%. But when the total cost of building ownership (TCBO) is considered, the TCBO savings are:

- $19,652 over 12-years (average Canadian home ownership term per house);
- $111,035 over 25-years (the mortgage term); and,
- $553,000 over 60-years (the useful life of a home prior to major renewal).

Results show that PLE homes yield significant financial savings over the building's life cycle, increased home value, and GHG reduction.

See Appendix D to review the complete PEI Home Case Study with additional detail and compelling information.

For the industrial sector, it is possible to reduce end-use energy demand in 2050 by 38% compared to BAU while transitioning to clean, renewable energy. A lot of the contemporary electricity use is from motor systems. The efficiency of motor systems can be improved using variable frequency drives. Like with the residential and C&I sectors, LED lighting can reduce electricity demand in the industrial sector. This sector's demand for energy is assumed to increase as the city's population grows. High-temperature electricity-powered heat pumps and electric resistance heating are largely proposed to provide heating requirements within the industrial sector. This improves energy efficiency greatly compared with fossil fuels or bioenergy.

By 2050, all light-duty vehicles in the on-road transportation sector can be battery operated electric vehicles. This reduces end-use energy significantly due to the efficiency of electric motors compared to internal combustion engine vehicles. Much of medium- and heavy-duty transport fleets can be fully electric. Some hydrogen fuel cell-electric hybrids are expected to be available for long-distance heavy-duty transport. In these instances, end-use energy accounts for production of hydrogen using electrolysers, compression into tanks, and fuel cell efficiency. These fuel cell vehicles are less efficient than electric drive vehicles but slightly more efficient than conventional internal combustion engines.

Cost Savings for Residents

Energy costs include energy, delivery infrastructure, storage, and includes equivalent revenues to the gas taxes, that help to fund infrastructure. Energy prices will stabilize because once installations are in place, the energy to power them (i.e., wind and sun) are free.

Energy costs in Charlottetown with a 100% renewable city are expected to be slightly less than today's, due to a reduction in energy demand.

Annual community energy savings are expected to be $7.1M in 2050. With a projected population of 54,850, the per capita savings are estimated at $130.

There are also savings related to a reduction in health and climate costs. The transition to a clean economy will reduce air pollution thus greatly cutting down on related illnesses and avoiding an estimated seven deaths per year – generating annual health cost savings of $85 million. Global social costs of carbon (global-SCC) estimates are an attempt to quantify the externalized damage costs which are associated with GHG emissions. The global-SCC is expected to be $540/$tCO_2e$ in 2050. With BAU, all-sector emissions are about 402,850 tCO_2e in 2050. Transitioning to a

23 National Building Code.

100% renewable and carbon neutral city can avoid annual global warming damage costs of $217 million in 2050. Climate and health cost savings per person per year are estimated to be slightly more than $5,500. The net benefit of transition to a clean economy is approximately $5,630/person/year in 2050 (2017 CAD).

A list of measures and actions being taken by Islanders that result in annual energy savings, financial savings, GHG savings, and water savings are shown in Appendix C.

Energy Sources

A number of renewable energy sources will be used in 2050 to meet the community's energy demand across the four main sectors. **Table 5** shows a possible supply mix, including wind (50%), solar (30%), hydro (9%), biomass (5%), municipal solid waste (5%), and biogas (1%).

Table 5: City of Charlottetown Community End-Use Energy, 2050 Possible Supply Mix

	GJ	Shares %
Wind	1,500,345	50%
Solar	910,924	30%
Hydro	267,919	9%
Biomass	156,265	5%
MSW	143,762	5%
Biogas	24,015	1%
	3,003,230	

Wind and Solar Energy

Increased harnessing of wind and solar will be an important component of the City's move toward 100% renewable energy. **Table 6** displays the wind and solar plants or devices to supply 80% of all energy across the main sectors in Charlottetown in 2050.

The physical footprint of the wind and solar devices required to supply that energy demand is 0.05% of PEI's land base. For comparison, 42.5% of PEI's land base is dedicated to agriculture. Solar and wind combined would have a physical footprint 800 times smaller than agriculture on PEI. The spacing between wind and solar devices remains useful for other purposes as well.

Jobs

Transitioning to a low-carbon future is expected to result in job creation in the community. PEI results from the recent modeling on energy efficiency-related jobs, scaled to the population of Charlottetown, suggest that increased energy efficiency retrofits could add 526 10-year full-time jobs. GDP in the city could grow by $60 million annually over the next decade from increased energy efficiency retrofits in buildings.

Solar installations create employment within the City. More jobs will be created within the Island's economy by transitioning to clean, renewable energy sources

Table 6: Wind and Solar Installations, Power, Land and Rooftop Areas

Type of Device or Plant	Rated Capacity of Device or Plant (MW)	Capacity Factor[a]	Number of Devices or Plants	Rated Capacity (MW)	Average Power Output (MW)	Average End-Use Demand Met by Wind & Solar (MW)	Spacing (km^2)	Footprint (km^2)	Other Areas (km^2)[g]
Onshore Wind Turbines	3	42.0%	50	150	63.0	47.6[c]	18.8[f]	0.38	0.0007
Solar PV Plants	15	14.8%	12	180	26.6			2.51[f]	
Res Rooftop PV	0.008	13.6%	1800	14.4	2.0	28.9[d]			0.0652
C&I Rooftop PV	0.075	13.9%	400	30	4.2				0.1630
Total Average Power (MW)					95.8	76.4[b]			
Percentage Footprint/Spacing							0.33%	0.05%	

Notes:

a. Capacity factors are conservative estimates of the annual average power output as a percentage of installed or rated capacity.
b. The difference between total power generation and end-use power delivered accounts for the assumed transmission and distribution (T&D), storage losses, and curtailment. The wind plus solar output's transmission and distribution (T&D), storage losses, and curtailment is assumed to average 20.2%.
c. Wind's T&D, storage losses, and curtailment from output to end-use is assumed to average 24.5% on an annual basis.
d. Solar's assumed annually-averaged T&D, storage losses, and curtailment from output to end-use is 11.9%.
e. Wind turbine spacing assumes oversized blade diameters (D) of 116 meters per 3 MW wind turbine, with array spacing of 4Dx7D. Array spacing can be determined based on numerous factors. Spacing of 3Dx6D has been used in cases, 12.1 km^2 or 0.21% of PEI's land base. If 6Dx9D is used, 36.3 km^2 of spacing is required, 0.64% of PEI's land. If 6Dx6D is used, depending on nature of prevailing winds, then 24.2 km^2 is needed or 0.43% of PEI's land. If wind turbines are placed offshore there are tradeoffs, including no inland spacing.
f. For solar PV, Sunpower X22 panels are used. This determines rooftop areas, which have no land use. For solar PV plants, spacing between rows of panels is still accounted for as footprint although this space between panels could be dual-use (e.g. – grazing/beekeeping).
g. Other areas, for wind is turbine towers touching ground (included in its footprint). For rooftop PV, no land is needed. There is slightly more spacing for C&I rooftop PV vs residential per unit of installed capacity, as space between rows of panels can be used on flat roofs.

like wind and solar as most of the annual average energy comes from local supplies and efficiency retrofits create employment.

The projected energy efficiency and renewable energy jobs[23] numbers are shown in **Table 7**. These jobs[24] are estimated to add 614 30-year full-time jobs that contribute to economic growth between now and 2050.

Table 7: Projected Energy Efficiency and Renewable Energy Jobs

Technology	Full-Time Jobs	
	1 Year Jobs	30 Year Jobs
Energy Efficiency	5,264	175
Res Rooftop PV	643	21
Com/Gov Rooftop PV	950	32
Utility Solar PV Plant	8,719	291
Onshore Wind	2,850	95
Totals	**18,425**	**614**

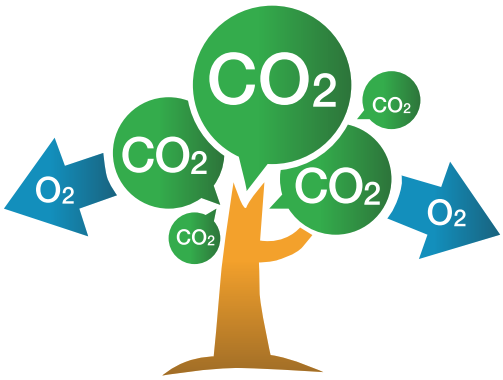
Greenhouse Gas Emissions in 2050

It is assumed here that the remaining energy sectors will be addressed with clean technology. In terms of agriculture, it is not expected there will be ruminant livestock within the city in 2050. With respect to waste, while the population is expected to grow, there are opportunities to improve waste management further to avoid waste-related GHGs. The city's total GHG emissions could decrease from roughly 456,000 tCO_2e in 2015 to about 22,500 (20,000-25,000) tCO_2e in 2050, a decrease of approximately 95%.

Carbon Neutrality by 2050

The City of Charlottetown aims to transition to 100% renewable energy for all purposes. The plan is to transition the urban area to entirely renewable sources by 2050 at the latest, with a goal of eliminating the majority of GHGs by 2030. It is possible to reduce gross positive GHGs by 95% by 2050 and become a carbon neutral city by introducing measures and technologies that result in negative emissions.

To that end, the City is exploring ways to offset remaining climate-relevant emissions with activities such as: a) tree planting, afforestation or reforestation, b) soil carbon sequestration, c) using biochar[25] as a soil amendment, d) direct air capture of CO_2, and e) protecting and restoring carbon sinks such as Island seagrasses.



Timeline for Transitioning Main Sectors

The overall timeline for transitioning to clean, renewable energy is at least 50-85% by 2030 and 100% by 2050. The GHG reduction targets are 65% below 2015 levels by 2030 and to be carbon neutral by 2050. For context, Toronto has established a goal of GHG emissions being reduced to 65% below 1990 levels by 2030. To meet this timeline, rapid transitions are needed.

23 Renewable energy jobs are calculated using the US National Renewable Energy Laboratory's Jobs and Economic Development Indicator (NREL JEDI) Models.

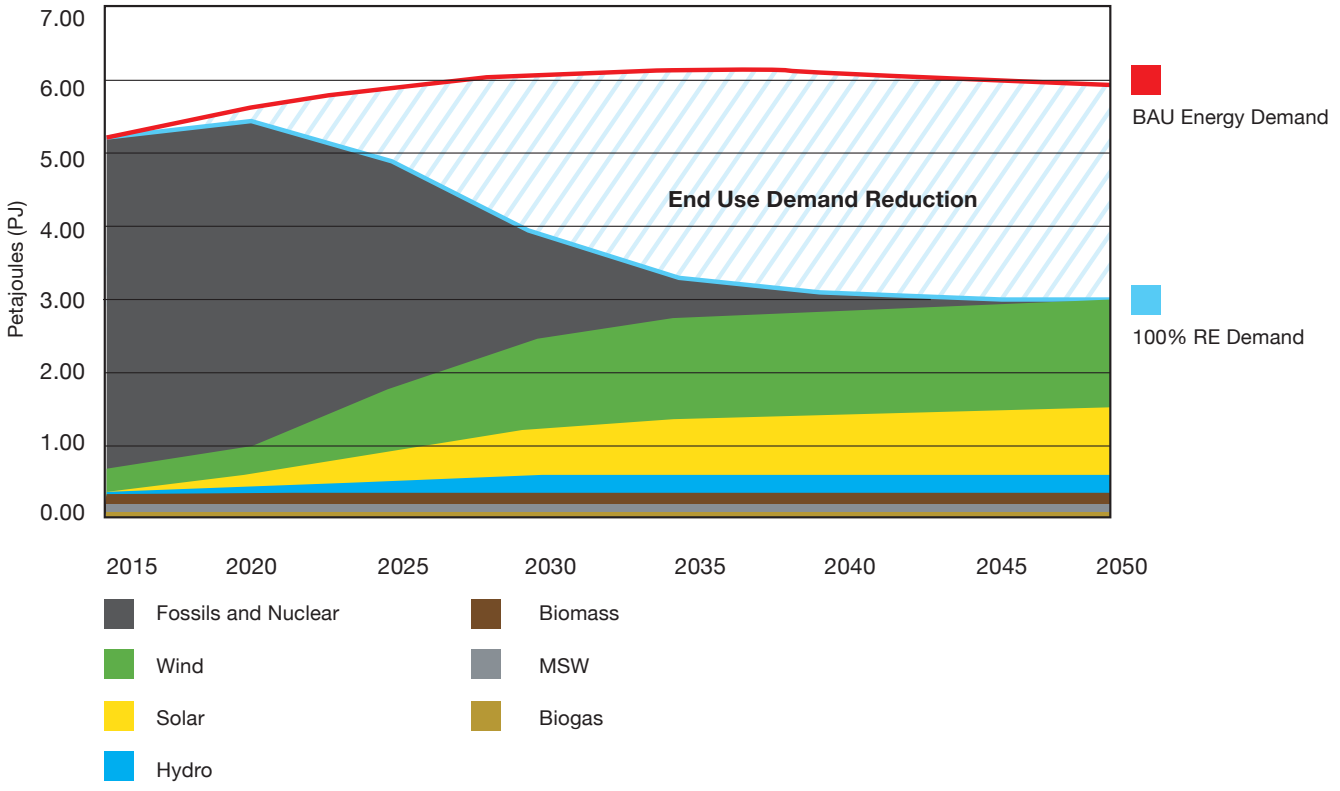
24 Clean Energy Canada, "Less is More," Technical Report, 2018. GDP growth from energy efficiency retrofits and added efficiency jobs based on above study results for PEI. Provincial results scaled to Charlottetown by population. http://cleanenergycanada.org/report/less-is-more/.

25 Biochar is a soil amendment that rich in carbon, and can endure in soil for thousands of years.

Figure 8 shows Charlottetown's transition to a 100% renewable City by 2050. The residential, commercial and institutional, industrial, and on-road transportation sectors cover 97.5% of energy in the community. The remaining energy services can be satisfied using clean technologies outlined in Appendix B or in other ways. The top red line represents projected end-use energy demand with BAU. The red line compared to the blue line is the difference in energy demand between BAU and a shift to a 100% renewable city. The energy demand reduction occurs from a combination of energy conservation measures, energy efficiency measures, and electrification technologies beyond BAU.

Remaining fossil and nuclear can be seen phased out in favor of clean renewable energy, namely wind, and solar, although in this scenario there are niche roles for hydro, biomass, municipal solid waste, and biogas.

Figure 8: Charlottetown's Transition to a 100% Renewable City by 2050.



IMPLEMENTATION PLAN

Communities that undertake to implement a CEP with a business-as-usual approach will have limited success. Communities that stretch beyond business-as-usual and keep community energy planning and implementation top of mind for elected officials, City staff and community stakeholders tend to see much better results. This section guides movement from the community energy planning phase through the implementation phase.

Putting the CEP into Practice

Council support is critical for implementation, as it provides direction, inspiration and impetus for City staff and the community to prioritize community energy planning. Early engagement can help to surface key questions, considerations and possible challenges and can guide the CEP implementation team to focus on the aspects of the plan that matter most to the community. Their continued interest in the community energy planning process will help garner support from other community stakeholders and can ensure that the CEP remains a priority in City planning.

Simply put, implementation means putting the actions identified in this CEP into practice. City staff will reassess and track the ongoing evolution of emerging clean technologies, ensuring that Charlottetown is at the forefront of innovation. Working more closely to strengthen existing partnerships, and by forging new ones, staff will move toward greater innovation and economic development at the community level and within City operations.

Throughout the implementation phase, community energy planning must be an ongoing process. The City is expected to spend in the range of $3.5-$4 million annually in energy costs over the next number of years within its corporate operations and there is a business case to substantially reduce energy demand across these operations and save money while reducing GHG emissions.

Sustainable community development requires recognition of the relationship between environment, economics and social instruments within the community. An adaptive management approach geared to creating sustainable community energy and climate change mitigation policies and practices also emphasizes the connection and confluence of those elements. Looking into the cultural mechanisms which contribute to Charlottetown's evolving community value system will be useful to adaptive management practices.

As part of implementation, the City may explore the possibility of a real-life test and experimentation environment where users and producers co-create innovations. This collaboration can involve public, private, and people-driven partnerships for user-driven and open innovation by bringing existing stakeholders, and new ones, together to facilitate and enhance the:

- co-design process by users and producers;
- discovery of emerging usages, behaviours and market opportunities in cleantech;
- implementation of live, test scenarios within our community of energy users; and
- assessment of concepts, products and services according to various criteria.

Finally, CEP implementation involves improving energy and GHG inventories in the future as access to data allows, comparing progress from previous inventories.

"We can put ourselves on the world stage if we take an aggressive approach to climate change.

We could become the first city/province/state in North America to be 100% carbon neutral.

Our small population has an advantage in creating a model for how to live sustainably through wind power, solar power, etc."

- Feedback from Charlottetown resident

Building Citizen Sensor Network

Work is underway to build a citizen-led community sensor network using low-power, long-range LoRaWAN technology. The network seeks to collect data from a geographically dispersed collection of low-cost sensors measuring temperature, humidity, solar radiation, air pollution, sound, and other conditions. This process will provide the community with a richer pool of data from which to derive trend information and to guide climate policy.

Advisory Group:

- **Peter Rukavina**, Open Data Advocate, Project Manager
- **Michelle Cottreau**, Medical Physicist, Queen Elizabeth Hospital
- **David Cairns**, Former Director of Computer Services, University of PEI
- **Rosemary Le Faive**, Digital Infrastructure and Discovery Librarian, University of PEI
- **Ramona Doyle**, Sustainability Officer, City of Charlottetown
- **Matt McCarville**, Community Energy Planner, City of Charlottetown

Partnerships

Charlottetown's success as a renewable city depends on strong partnerships between all levels of government, businesses, utilities, community groups, households and individuals. These partnerships will enable coordinated efforts and engagement, greener households and operations, and better tracking of data to inform future actions.

Working together, the City and its residents will make forward-looking energy decisions for the benefit of all.

Reporting

City staff responsible for the CEP's implementation will maintain an annual energy, expenditures, and GHG inventory for corporate operations and provide regular (e.g. quarterly) reports to Council or committees of Council. Reports can be mostly qualitative however measurable updates can be included if the data is available. They will describe measurable benefits of implementation (e.g., progress on GHG reductions). Additional presentations to Council may be made as needed to report on the community energy planning process and implementation milestones. Council approval will be sought to proceed with specific projects.

With respect to City operations, staff will look at baseline energy, expenditures, and GHGs before and after facility retrofits. Monitoring and reporting the benefits will provide motivation to proceed with the next steps in reducing GHGs. More sophisticated energy management software, clean energy project analysis software, and real-time manual and automated energy management capabilities would aid in the achievement of positive outcomes and the reporting of such.

To communicate with city businesses and residents, the Annual Sustainability Report will include a dedicated section to update on CEP implementation progress.

Summerside Drives Innovation and Economic Development

Summerside is becoming recognized worldwide for innovative green approaches. Its Living Lab is an environment (the geographic community) in which people and technology gather and in which the everyday context stimulates and encourages research, development, innovation and ultimately commercialization. Among the many Living Lab initiatives are: development of the province's largest solar array (with a solar carport and battery storage system); introduction of cutting-edge artificial intelligence to integrate even more clean, renewable energy while reducing energy costs; and an exploration into moving to electric transit.

Renewal

At a minimum, the community-level energy and GHG inventory, and subsequent CEP, will be renewed every five years. With the passage of enough time, a comparison between the original and updated inventories will be valuable to determine if community-level progress has been made. Ideally, the inventory and energy plan will be conceptualized as living documents, or works-in-progress, subject to ongoing renewal as better data and new information emerges.

The implementation phase will feature a dynamic ongoing learning process that feeds back into the improvement of the community inventory and community energy planning. New governance models will ensure practical implementation of the CEP is as successful as possible and greater cooperation between community stakeholders will entice energy innovation and marketable solutions. An emphasis will be placed on increased public engagement on energy and climate issues, greater engagement of elected officials regarding these inter-related files, and the continuous renewal of inventories and plans to track and reduce energy use, energy expenditures, and its externalities like global warming damages costs and air pollution health costs.

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- **PEI Energy Systems**
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APPENDIX A: GLOBAL PATHWAYS TO AVOID 1.5°C OF GLOBAL WARMING

Figures 1, 2, and 3 show global GHG reduction pathways to avoid 1.5°C of global warming

- Without any negative emissions, limiting global warming to 1.5°C requires zero emissions in 10-20 years;
- Negative emissions generally refers to techniques that remove CO_2 from the air;
- Greater deployment of negative emissions measures and technologies allows for slightly slower short-term mitigation or reduction of GHGs;
- **Figure 1** shows the negative emissions requirements in a scenario of reducing GHGs by 35% relative to today's levels in 2030, and being carbon neutral in 2050 – the negative emission requirements for future generations may be unmanageable;
- **Figure 2** shows 50% GHG reductions in 2030, and net zero emissions in 2050 – there still are challenging negative emissions required to limit global warming by 2100;
- **Figure 3** shows that by reducing GHGs 65% relative to today's levels in 2030, and being net zero emissions in 2050, the negative emissions requirements for future generations are much more manageable;
- Negative emissions should start today to get to the necessary scale;
- To avoid more than 1.5°C of global warming, carbon neutrality must be achieved by 2050 at the latest; and
- The recent IPCC on Global Warming of 1.5°C notes that it is possible within the laws of chemistry and physics to limit warming to 1.5°C, but doing so requires unprecedented changes. Allowing the global temperature to temporarily exceed or 'overshoot' 1.5°C means a greater reliance on techniques that remove CO_2 from the air (negative emissions) to return global temperature to below 1.5°C by 2100. The effectiveness of such techniques are, unproven at large scale, and some may carry significant risks for sustainable development.

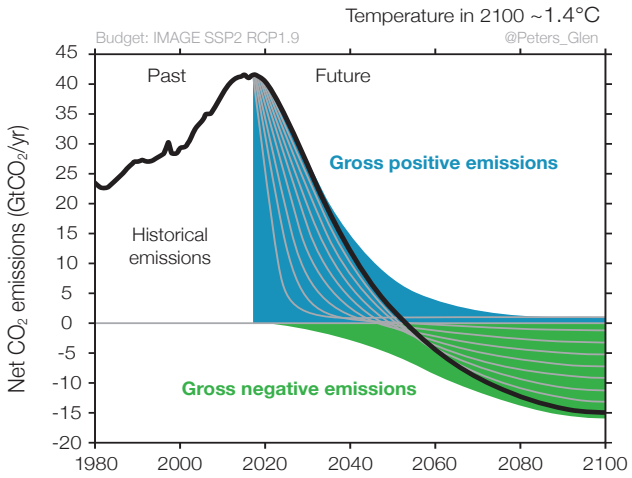

Figure 1: Global pathway with 35% GHG reductions by 2030.

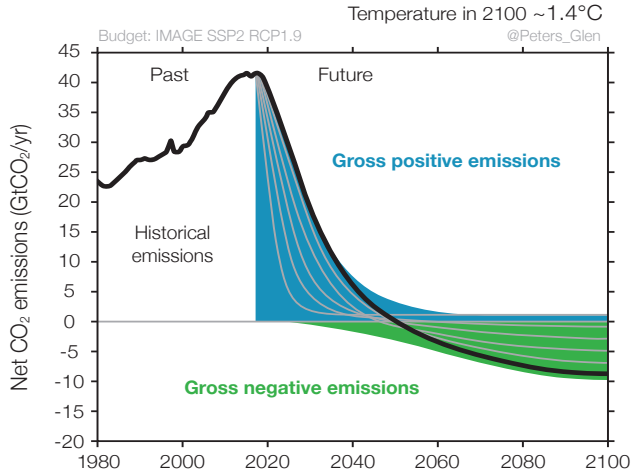

Figure 2: Global pathway with 50% GHG reductions by 2030.

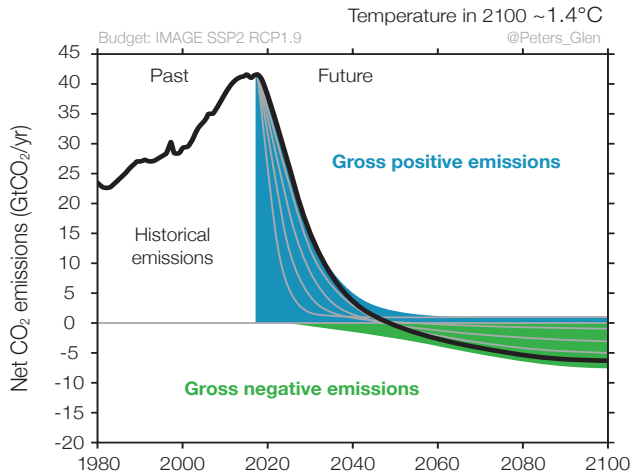

Figure 3: Global pathway with 65% GHG reductions by 2030.

APPENDIX B: MEASURES AND TECHNOLOGIES FOR TRANSITIONING TO CLEAN, RENEWABLE ENERGY

A non-exhaustive list of measures and technologies the city evaluated is provided below. Most of these measures and technologies could comprise elements of the City's energy transition. This community energy plan is non-prescriptive. The list does not necessarily preclude the inclusion of other measures or technologies.

A. Energy Efficiency Measures / Energy Demand Reduction

a. Increased Efficiency in Buildings Through:
   i. Lighting
      1. LED lighting
      2. Advanced lighting controls
   ii. Appliances
      1. High efficiency industrial pumps and motors
      2. High efficiency commercial appliances
      3. Induction cooktops
      4. Energy efficient residential appliances
      5. Variable refrigerant flow (VRF or VRV)
   iii. Heating and Cooling Efficiency in Buildings
      1. Programmable thermostats
      2. Improved wall, floor, ceiling, and pipe insulation
      3. High-efficiency triple-pane windows
      4. Energy efficient framing practices (including heritage window retrofits)
      5. Passive solar / passive house / zero carbon building design
      6. Sealing doors, windows, walls, outlets, and fireplaces to reduce heat/cold loss
      7. Ductless heat pumps for heating and air conditioning
      8. Central (ducted or air-to-water) air-source heat pumps
      9. Central air-source heat pumps with thermal energy storage (TES)
      10. Night ventilation cooling, and passive ventilation design
      11. Combined space heating/cooling and water heating
      12. Air flow management of IT infrastructure
      13. Heat recovery ventilation
      14. Building energy monitoring and management
   iv. Water Efficiency
      1. High efficiency residential and commercial water fixtures
      2. Greywater re-use systems
      3. Drainwater heat recovery

b. Reduced Transportation Demand Through:
   i. Telecommuting rather than commuting by car or air
   ii. Improved biking and pedestrian infrastructure
   iii. Electric pedal-assist bikes and scooters
   iv. Improved public transportation
   v. Transportation demand management programs

vi. Automatic vehicle location fleet monitoring
vii. Improved carpooling and ride-sharing programs and technologies
viii. Urban land use practices to reduce demand

c. Improved Vehicle Efficiency Through:
i. Low rolling resistance tires
ii. Lightweight materials
iii. Regenerative braking systems
iv. High efficiency settings or dashboard efficiency displays
v. Properly inflated tires
vi. Reduced idling
vii. Slow acceleration and easy stops

B. Clean, Renewable Electric Power Generators

a. Onshore/offshore wind turbines (PEI/region, *included in scenario)
b. Solar photovoltaics for rooftops and power plants (PEI/region, *included in scenario)
c. Geothermal power plants for electricity (NB)
d. Tidal turbines (Maritime region)
e. Wave devices (Atlantic region)
f. Existing large hydroelectric reservoirs (QUE, NL, NB, *included in scenario)
g. New small hydroelectric reservoirs (NB)
h. In-stream hydroelectric turbines (Eastern Canada region)

C. Low-Temperature Heat Generators

a. Geothermal (ground-source) heat pumps
b. Solar thermal collection devices
c. District Heating/Cooling
i. Low-temperature district heat using solar thermal collectors and/or surplus renewable electricity with TES, including seasonal energy storage

D. High-Temperature Heat Generators

a. District Energy (electricity and heat generators)
i. Biomass
ii. Waste-to-energy
iii. High-temperature TES of surplus wind energy in hot rocks for electricity and heat
b. High temperature industrial heat pumps
c. Biogas from wastewater treatment
d. Renewable natural gas produced through methanation with surplus renewable electricity
e. Biomass

E. Electricity Storage

a. Batteries
b. Adiabatic compressed air energy storage
c. Pumped hydroelectric storage
d. Flow batteries
e. Flywheels
f. High temperature thermal energy storage for electricity generation

F. Heat Storage Devices

a. Hot water tanks
b. Thermal energy storage in dense, ceramic bricks, or phase change materials
c. Heat pumps coupled to phase-change materials
d. Thermal walls and floors
e. High temperature thermal energy storage for cogeneration
f. Borehole thermal energy storage for seasonable energy storage
g. Pit thermal energy storage for seasonal energy storage
h. Aquifer thermal energy storage for seasonal energy storage

G. Cold Storage Devices

a. Chilled water tanks
b. Ice storage
c. Chilled slabs
d. Borehole thermal energy storage for seasonal energy storage
e. Pit thermal energy storage for seasonal energy storage
f. Aquifer thermal energy storage for seasonal energy storage

H. Hydrogen Storage Devices

a. Electrolysers to produce hydrogen (H_2)
b. Electric compressors to compress H_2
c. Tanks to store H_2

I. Demand Response

a. Technology to enable remote start up and shut down of appliances and equipment that have flexible demand
b. Utilities provide incentives for industry, companies, and individuals to shift their electricity use for certain uses and processes to non-peak times of day or night.

J. Electric Vehicles

a. Light-, medium-, and heavy-duty on-road automobiles can mostly be all-electric
b. Short-distance trucks, and buses, such as transit buses can be all-electric
c. All-electric aircraft for short-haul flights
d. Most off-road vehicle equipment can be electrified
e. Agricultural equipment can be primarily electric
f. Forestry equipment can typically be electric
g. Forklifts and scissor lifts, and other machines are already electric

K. Hydrogen Fuel Cell-Electric Hybrid Vehicles

a. Long-distance trucks for heavy-duty ground transportation can be hydrogen fuel cell-electric hybrids
b. Long-distance buses can be hydrogen fuel cell-electric hybrids
c. Long-distance ships can be moved with hydrogen fuel cell-electric hybrids
d. Aircraft for long-distances can be hydrogen fuel cell-electric hybrids
e. Heavy-duty municipal, and construction equipment can be hydrogen fuel cell-electric hybrids as necessary
f. Agricultural equipment can also be fuel cell-electric hybrids

L. Electric Car Charging Infrastructure

a. Home car chargers with smart charging and vehicle-to-grid (V2G)
b. Public chargers with smart charging and V2G
c. Fast chargers

M. High-Temperature Industrial Equipment

a. Electric arc furnaces
b. Dielectric heaters
c. Electric induction furnaces
d. Converting excess low-price wind and solar electricity into high-temperature stored heat

N. Electric Appliances to Replace Oil, Propane, or Gasoline

a. Battery electric lawnmowers and whipper snippers
b. Electricity-powered or electrolytic hydrogen-fueled outdoor cooking

O. Negative Emissions Measures and Technologies

a. Tree planting, afforestation or reforestation
b. Soil carbon sequestration
c. Biochar
d. Direct air capture of CO_2
e. Protecting and restoring carbon sinks such as Island seagrasses

APPENDIX C: WAYS TO SAVE CO_2, ENERGY, WATER AND MONEY

Below is a list of measures and actions being taken by Islanders that result in annual GHG, energy, water, and financial savings:

Reducing Electricity

- **Using a clothes line in the warm season** – estimated annual savings: 85 kilograms (kg) of carbon dioxide (CO_2), 304 kilowatt-hours (kWh) of electricity, and $46;
- **Reducing standby power throughout a household** – estimated annual savings: 103 kg of CO_2, 368 kWh of electricity, and $56;
- **Using a toaster oven when possible** – estimated annual savings: 108 kg of CO_2, 385 kWh of electricity, and $58;
- **Keeping refrigerator seals and clothes dryer lint filters clean** – estimated annual savings: 60 kg of CO_2, 216 kWh of electricity, and $33;
- **Installing LED light bulbs** – estimated annual savings: 298 kg of CO_2, 1,063 kWh of electricity, and $160;
- **Keeping lights off when not in use** – savings were 118 kg of CO_2, 420 kWh of electricity, and $63;
- **Use ceiling fan instead of an air conditioner for hot days** – estimated annual savings: 113 kg of CO_2, 405 kWh of electricity, and $61;
- **Unplugging a garage door opener and parking outside in non-winter months, plus using a power bar for the microwave to eliminate standby electricity** – estimated annual savings: 15 kg of CO_2, 55 kilowatt-hours of electricity, and $8;
- **Unplugging a heat recovery ventilator in the warm season (if no unfavorable effects – stale air, condensation)** – estimated annual savings: 171 kg of CO_2, 612 kWh of electricity, and $92;
- **Installing a 7-kW solar photovoltaic (PV) system** – estimated annual savings: 2,404 kg of CO_2, 8,585 kWh of electricity, and $1,246;

Conserving Water

- **Brushing teeth using cold tap water sparingly** – estimated annual savings (one person): 2 kg of CO_2, 11,497 litres (L) of water, and $10;
- **Taking shorter showers** – estimated annual savings (one person): 77 kg of CO_2, 5,460 L of hot water, 28 L of oil; and $35;
- **Switching to ultra-low-flow** showerhead **with Charlottetown Free Exchange** – estimated annual savings (household of four): 667 kg of CO_2, 47,309 L of hot water, 244 L of oil, and $303;
- **Switching to a low-flow toilet** – estimated annual savings (household of four): 13 kg of CO_2, 67,095 L of water, and $57;
- **Using a rain barrel** – estimated annual savings were 0.4 kg of CO_2, 2,160 L of municipal water, and $2;

Reducing Heating Requirements

- **Using passive solar heating design** – up to 30% of a conventional home's heating needs can be obtained;
- **Upgrading attic insulation** – estimated annual savings (R-12 to R-60, 1288 square foot attic): 1,767 kg of CO_2, 646 L of oil, and $696;
- **Using solar hot water preheating** – estimated annual savings: 1,974 kg of CO_2, 734 L of oil, and $773;
- **Getting a heat pump water heater vs oil** – estimated annual savings: 1,490 kg CO_2, 698 L of oil, and $526;
- **Using a high-efficiency ductless mini-split air-source heat pump to offset standard electric space heating** – estimated annual savings: 3,280 kg of CO_2, 11,717 kWh of electricity, and $1,539;

- **Using a high-efficiency ductless mini-split air-source heat pump to offset space heating using oil** – estimated annual savings: 3,728 kg of CO_2, 1,963 L of oil, and $1,231;
- **Using a ground-source heat pump to replace space and water heating using oil** – estimated annual savings: 5,898 kg of CO_2, 2,765 L of oil, and $2,082;
- **Using a programmable thermostat** – estimated annual savings: 358 kg of CO_2, 131 L of oil, and $141;

Transportation Choices

- **Commuting by bicycle** – estimated annual savings: 805 kg of CO_2, 350 L of gasoline, and $445
- **Youth biking in summer to activities like sports and sleepovers** – estimate annual savings: 106 kg of CO_2, 46 L of gasoline, and $59;
- **Commuting using public transit** – estimated annual savings: 949 kg of CO_2, 413 L of gasoline, and $525-$1,125 (high financial savings include avoided monthly parking passes)
- **Making lists and planning trips** – estimated annual savings: 126 kg of CO_2, 55 L of gasoline, and $70;
- **Keeping tires properly inflated** – estimated annual savings: 193 kg of CO_2, 84 L of gasoline, and $107;
- **Reduce idling** – estimated annual savings: 209 kg of CO_2, 91 L of gasoline, and $116;
- **Accelerating slowly and using easy stops** – estimated annual savings: 492 kg of CO_2, 214 L of gasoline, and $272;
- **Choosing an electric car** – estimated annual savings (with 20,000 kilometers traveled per year versus a six-cylinder vehicle): 4,078 kg of CO_2, 2,180 L of gasoline, and $2,270;

Food Choices

- **Shifting from high meat-eater to medium meat-eater** – estimated annual savings: 569 kg of CO_2
- **Shifting from high meat-eater to low meat-eater** - estimated annual savings: 920 kg of CO_2
- **Shifting from high meat-eater to fish-eater** - estimated annual savings: 1,197 kg of CO_2
- **Shifting from high meat-eater to vegetarian** - estimated annual savings: 1,234 kg of CO_2
- **Shifting from high meat-eater to vegan** - estimated annual savings: 1,570 kg of CO_2
- **Shifting from medium meat-eater to low meat-eater** – estimated annual savings: 350 kg of CO_2
- **Shifting from medium meat-eater to fish-eater** – estimated annual savings: 628 kg of CO_2
- **Shifting from medium meat-eater to vegetarian** – estimated annual savings: 664 kg of CO_2
- **Shifting from medium meat-eater to vegan** – estimated annual savings: 1,000 kg of CO_2
- **Shifting from low meat-eater to fish-eater** – estimated annual savings: 227 kg of CO_2
- **Shifting from low meat-eater to vegetarian** – estimated annual savings: 314 kg of CO_2
- **Shifting from low meat-eater to vegan** – estimated annual savings: 650 kg of CO_2
- **Shifting from fish-eater to vegetarian** – estimated annual savings: 37 kg of CO_2
- **Shifting from fish-eater to vegan** – estimated annual savings: 372 kg of CO_2
- **Shifting from vegetarian to vegan** – estimated annual savings: 336 kg of CO_2

Outdoor Practices

- **Using a reel mower for emissions-free lawn-care** – estimated annual savings: 85 kg of CO_2, 36 L of gasoline, and $46;

Notes:

a. In a few examples, such as using an air-source heat pump to offset oil, GHGs and financial costs for the electricity are accounted for, but the electricity needed to operate the heat pump is not shown. Likewise, electricity use has GHGs and costs associated for electric cars, which is accounted for, but this electricity consumption is not shown.

b. Results vary on a case-by-case basis. Savings reflect real-world examples of residents who are acting to reduce their carbon footprints within our capital region.

c. Financial savings are calculated using energy prices effective early October 2018.

d. For food choices, results based on UK study, and a standard diet of 2,000 food calories (kcal or Cal) daily. High meat-eater means >100 g/d, medium meat-eater is 50 to 99 g/d, low meat-eater is <50 g/d. See Scarborough, P., Appleby, P.N., Mizdrak, A. et al. Climatic Change (2014) 125: 179. https://doi.org/10.1007/s10584-014-1169-1.

APPENDIX D: PEI HOME CASE STUDY

SRPCANADA.COM

Monetizing Building Sustainability

PEI CASE STUDY

R102.22

www.seefar-valuation.com

Minimum Code Compliant Home vs Passive Low Energy Home

Summary

This case study compares a Minimum Code* Compliant Home (MCH) that uses heating oil, to a Passive Low Energy Home (PLE), designed using the Passive House Planning Package. Our findings show that the average increase in initial cost for a PLE over MCH in PEI is 10% to 20%. But when the total cost of building ownership (TCBO) is considered, the TCBO savings are:

- $19,652 over 12-years (average Canadian home ownership term per house);
- $111,035 over 25-years (the mortgage term); and,
- $553,000 over 60-years (the useful life of a home prior to major renewal).

Background

Building owners, designers, accountants, economists, lenders and governments, often lack sufficient or consistent methods of determining the investment value and cost savings when it comes to investing in energy efficient and/or sustainable building features. The most common techniques used are simple payback, return on investment (ROI), or net present value (NPV). However, these parameters do not show the real value of PLE; in part because they are often calculated over a short time period, such as 10 or 20 years, or over the useful life of a single building component. A better approach would be to:

- Evaluate the whole building as a sustainable design system, as opposed to a single component.
- Evaluate the useful life of the building, which could easily be 60-years before major renewal is required. This period could be extended considerably by making the building more sustainable and durable.
- Determine the value by calculating the TCBO. The TCBO is determined using the SEEFAR-Valuation© which includes all the costs of building ownership such as mortgage interest, utility costs, maintenance, GHG emission tax, property tax, and insurance, using aggregate component life cycle analysis.

* National Building Code

It is important to understand that a Passive Low Energy Building could easily be defined as a building that can integrate and optimize all major building performance attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity, and is sometimes referred to as a high-performance home.

The durability and sustainability of building materials is important because it has an impact on how often building components need to be replaced, and at what cost. A recyclable metal roof with a 50-year plus life is more durable than asphalt shingles with an 18-year life that end up in landfill. In addition, occupant comfort, productivity and a building free from harmful materials is important. To simplify the analysis for this study, however, we do not include a comprehensive analysis of options for more durable materials.

This case study is focused on a comparative analysis of the TCBO of a MCH (using heating oil) to a PLE (all electric) with International Passive House design features. The table below describes the construction features of each home:

Home Comparison Construction Design Features

TABLE 1	PEI Minimum Code Compliant Home (MCH)	PEI Passive Low Energy (PLE)
Utility description summary	#2 Heating Oil - Electric	All Electric
R-value of above grade walls	R17	R60.2
R-value of attic space	R50	R78.8
R-value of below grade walls	R17	R43
R-value of foundation floor	R11	R40.8
Area of conditioned space	2,117 ft^2	2,117 ft^2
Window type	Dual pane	Passive - U 0.14
Window area	227	227
Exterior door type	Insulated steel	R7.1
Heating system description	87% AFUE oil warm air furnace	1,500 watts of Electric baseboards
Ventilation system description	HRV	Zehnder 350 Comfoair 92% efficiency
Cooling system description	none	none
Water heating description	75% eff oil water heater	Electric tank
Lighting description	LED	LED
Appliance description	Electric	Electric

Table 2 shows the initial capital cost of the homes. The first row shows costs of the components that affect energy consumption; this includes many of the items described in the construction comparison. The first row also shows that the PLE home used in this analysis has a 40% higher cost for the energy configuration construction design.

The second row shows that the cost of non-energy-related components were intentionally kept identical to eliminate the impact of differences and therefore assumes that the interior and exterior finishes, cabinets, and trims on both homes are identical.

The last row shows the total construction cost, which is 19% higher for the PLE home used in this analysis.

TABLE 2	PEI Minimum Code Compliant Home (MCH)	PEI Passive Home (HPH)	Total Cost Differences
Energy-related construction costs	$199,2666	$279,157	40%
Non energy-related construction costs	$211,700	$211,700	0%
Total Construction Costs	$410,966	$490,857	19%

There are additional inputs to the SEEFAR-Valuation© such as equipment cost, equipment life in years, energy costs and consumption, GHG burden, cost escalations, and others. These all have a bearing on the TCBO and are based on published industry information.

Results

TABLE 3	PEI Minimum Code Compliant Home (MCH)	PEI Passive Home (HPH)	Total Savings	Savings %
60-year Greenhouse gas emissions (kg)	490,251	52,942	437,309	89.2%
Energy use index (EUI) (kWh/m2/year)	203	49	154	76%
TCBO* at 12-years	$274,197	$254,545	$19,652	7%
TCBO* at 25-years	$618,768	$507,733	$111,035	18%
TCBO* at 60-years	$1,741,812	$1,189,253	$553,000	32%

*These costs are independent of site purchase and site services (driveway, well, septic).

The first row shows that the greenhouse gas (GHG) emissions are 89.2% lower for the PLE. This reflects the low emission rate of PEI electricity as compared to the emission rate of heating oil in PEI.

The second row shows the Energy Use Index (EUI). The energy consumption is 76% lower for the PLE home. This is an important consideration because energy costs and utility infrastructure are rising faster than inflation, due to the renewal investment demand of aging infrastructure.

Rows three, four and five compare the TCBO over 12-years; 25-years; and, 60-years.

In terms of the real costs of monthly utilities, the MCH will have an average monthly utility bill of $400 per month (at year one) while the PLE home will have an average annual monthly utility bill of $148 per month (at year one). At the current level of rate increases, it will take 40-years for the PLE to reach the same $400 monthly cost level, by which time the monthly costs for the MCH will have tripled.

After allowing for 1/10th of one percent difference in the annual market value retention rate of the PLE home, once the 25-year mortgage is paid off, the PLE home is projected to have $62,985 in higher net market value. This represents a 3.1% annual return premium on the $79,891 higher initial investment cost of the home.

This higher initial investment of $79,891 also produces a cost savings value stream with Net Present Value of $94,208 by the end of the 25-year mortgage term (2.71% discount rate). This means that the PLE home produces homeowner value in both lower TCBO and higher market value retention.

Every building has its own unique design and construction characteristics that need be accounted for in optimizing the investment value. The SEEFAR-Valuation© allows the user to conduct a scenario analysis process to evaluate the impact of the potential building components and design features. The energy use and durability are reflected the TCBO outcomes.

Scenario modeling can also demonstrate how the TCBO is affected by using more durable materials such as ceramic tile floors, metal roofing, more durable hot water tanks or more efficient components that can reduce emissions and save money, such as solar photovoltaic panels. This process will help to optimize the TCBO projections at the early design stage.

A SEEFAR-Valuation© methodology is the most definitive way to monetize the relevant benefits of each design option, and of comparative home designs.

Acknowledgments:

This Case Study was commissioned by the City of Charlottetown and prepared with technical assistance from Trout River Homes Inc. and Habit Studio Inc.

A Note on Case Study Conclusions

The SEEFAR-Valuation© demonstrates that the life-cycle variance in the total cost of building ownership (TCBO) between different designs for two similar homes can easily be in the six-figure range. Therefore, drawing '*general*' conclusions about the TCBO differences between any two home types can prove to be misleading. The same risk applies when drawing TCBO conclusions based on units of '*building area*'.

As a matter of financial logic, homes that are more sustainable are more likely to have lower TCBO levels; larger homes are more likely to have higher TCBO levels; and, homes that reduce heat loss through high performance building envelopes can be expected to have lower TCBO levels than homes that offset heat loss through mechanical systems. For that reason, it is recommended that the type of aggregated, multi-component life cycle analysis used in the SEEFAR-Valuation© assessment be conducted on each home design option being considered.

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APPENDIX E: LINKS & RESOURCES

Energy efficiency information, rebates, programs, and incentives: (link)

Renewable Cities: (link)

Electric Vehicle Advantage/Information: Plug 'n Drive (link)

100% Renewable Energy Vancouver: (video)

100% Renewable Energy Overview by Professor Mark Jacobson: (video)

A Techno-Economic Study of an Entirely Renewable Energy-Based Power Supply for North America for 2030 Conditions: (study)

100% Renewable Energy hourly visualizations (world, NA, Canada, Canada-East region): (link)

Christian Breyer on 100% Renewable Energy: (video) (study)

100% Renewable Energy Scenario for Denmark: (video)

Evolv1 - Canada's first zero carbon building in Waterloo, ON: (case study)

Canada's first net zero supermarket - Ontario: (link)

For questions, or comments please contact:

Sustainability Officer
City of Charlottetown
PO Box 98, 199 Queen Street
Charlottetown, Prince Edward Island
Canada, C9A 7K2

Tel: 902.566.5548 Fax: 902.566.4701
rdoyle@charlottetown.ca
www.charlottetown.ca

The preparation of this Community Energy Plan was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

From: McKenna, Melanie (Charlottetown)
To: Andrea Battison
Cc: Jonathan Coady; Hooley, David (Charlottetown)
Subject: RE: Design Review Document
Date: Monday, July 20, 2020 12:54:41 PM

Good afternoon Ms. Battison:

Design Review was not part of this project. Section 3.14 of the Zoning & Development Bylaw requires Design Review of the 500 Lot Area, which this property is not located in, and for affordable housing on properties located outside the 500 Lot Area, which this project is not intended for. As a result, there are no Design Review documents in the City's record.

Best regards,

Melanie

Melanie McKenna | Cox & Palmer | Associate

Direct 902 629 3929 **Fax** 902 566 2639 **Web** coxandpalmerlaw.com
Address Dominion Building 97 Queen Street Suite 600 Charlottetown PEI

From: Hooley, David (Charlottetown)
Sent: Friday, July 17, 2020 4:32 PM
To: McKenna, Melanie (Charlottetown) <mmckenna@coxandpalmer.com>
Cc: Andrea Battison <andrea@crustipath.com>; Jonathan Coady <jcoady@stewartmckelvey.com>
Subject: Fwd: Design Review Document

See below. Please. Heck out and advise. Thx

Sent from my iPhone

Begin forwarded message:

> **From:** Andrea Battison <andrea@crustipath.com>
> **Date:** July 17, 2020 at 2:48:04 PM ADT
> **To:** "Hooley, David (Charlottetown)" <dhooley@coxandpalmer.com>
> **Cc:** Philip Rafuse <PJRafuse@irac.pe.ca>, Jonathan Coady <jcoady@stewartmckelvey.com>
> **Subject: Design Review Document**

Good Afternoon Mr. Hooley,

I have been unable to locate the Design Review documents for the UPEI project in the Record provided on behalf of the City. As I recall, you had mentioned it was included in the Record during the mediation session on Monday, July 13th.
I would appreciate it if you could advise me where in the Record I might find it please.

Thank you very much for your assistance.

Enjoy your weekend.

Kind regards,

Andrea

Notices Notices

CHARLOTTETOWN
PO Box 98 (199 Queen Street)
Charlottetown, PE C1A 7K2
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Fax: (902) 566-4701
www.charlottetown.ca

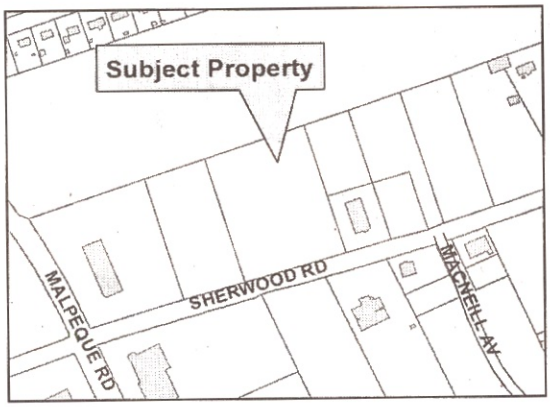
Additional information may be available on the City's website

PUBLIC MEETING

City Council will hold a Public Meeting to hear comments on the following:

Lot 19-1 Sherwood Road (PID #1107200)

This is a request to rezone the subject property from the Comprehensive Development Area (CDA) Zone to the Industrial Business Park (M-3) Zone and amend Appendix "A" the Official Land Use Map from Comprehensive Development Area to Industrial in order to develop two industrial developments; a heavy truck maintenance shop and a construction company office both of which will have ancillary warehousing and outside storage.



Amendments to the Zoning & Development By-law (Bylaw PH-ZD.2)

Proposed amendments to the Zoning & Development Bylaw pertaining to decrease the minimum lot size area for a Garden Suite to 0.30 acre, permit Mobile Canteens to start operations in April, creation of a Manufactured Housing Residential (MHR) Zone, insert Dormitory into the Institutional (I) as a permitted use, insert Storage Facility into the Light (M1), Heavy (M2), Business Park (M3) Industrial Zone(s), Parking Space Standards, adding Dormitory and Storage Facility to Appendix A: Definitions.

If you are unable to attend in person, the public meeting will be accessible via **videoconference or teleconference** to adhere to social distancing requirements by any of these methods:

- Webex; or
- Connect by phone and/or watch the live stream at www.charlottetown.ca/video;

Residents who just wish to watch or listen without participation may do so by watching the live stream at www.charlottetown.ca/video.

Residents who are interested in participating at the public meeting are encouraged to contact the Planning & Heritage Department by email at planning@charlottetown.ca or call 902-629-4158 on or before 4:00 p.m. on Thursday, June 25, 2020 to provide their contact details (name, phone number and/or email address). Business hours are between 8:00 AM – 4:00 PM, Monday – Friday. Staff will contact interested participants no later than 12:00 p.m. on Monday, June 29, 2020 with details on how to participate in the meeting.

Anyone wishing to view the proposed amendments may visit the City's website at www.charlottetown.ca under Mayor and Council, Meeting Packages (2020 Planning Board Meeting Packages). As the City encourages written submission, please forward any written comments to the Planning & Heritage Department at P.O. Box 98, 199 Queen Street, Charlottetown, PE, C1A 7K2 on or before 12:00 p.m. on Thursday, July 02, 2020. Comments may also be emailed to planning@charlottetown.ca. Any responses received will become part of the public record.

The Public Meeting will be held on:
TUESDAY, JUNE 30, 2020 AT 7:00 P.M.
COURTYARD, THE RODD ROYALTY
14 CAPITAL DRIVE

NOTICE

The City of Charlottetown currently has active Request for Proposals, Request for Quotes and/or Tenders. To stay up to date on all listings and view complete details, please visit us at www.charlottetown.ca/tenders

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