

Item No. 11.3.1
Halifax Regional Council
March 20, 2012

TO: Mayor Kelly and Members of Halifax Regional Council

Original signed

SUBMITTED BY:

Councillor Barry Dalrymple, Chair, Environment and Sustainability
Standing Committee

DATE: March 5, 2012

SUBJECT: Harbour East Transmission Line Update

ORIGIN

The Environment and Sustainability Standing Committee March 1, 2012 meeting.

RECOMMENDATION

It is recommended that Halifax Regional Council approve that:

1. The process undertaken to identify the route for a new transmission line between the Dartmouth East substation and Eastern Passage is acceptable;
2. The proposed project design and routing reasonably reflects values related to community identity and inspirational scenery as gathered during the Cole Harbour Basin: Open Spaces; and
3. The utilization of existing power lines in the HRM right-of-way to accommodate the new transmission line is acceptable, providing the project complies with By-Law S-300 (Streets By-Law) and that Nova Scotia Power Inc. agrees to continue to work with HRM staff around detailed design of the line along Bissett Road in order to meet Municipal objectives as outlined in the staff report dated March 1, 2012.

It is further recommended that Halifax Regional Council request the Mayor to send a letter of commendation to the community members of Harbour East Transmission Project Public Advisory Committee (Cole Harbour, Woodlawn and Eastern Passage), thanking them for their efforts in relation to the positive outcome.

BACKGROUND

A staff report dated March 1, 2012 was before the Environment and Sustainability Standing Committee at their March 1, 2012 meeting for consideration. As well, received a presentation from Terry Toner, Co-Chair of the Harbour East Transmission Project Public Advisory Committee and Director of Environmental Services for Nova Scotia Power Inc. on the project.

Additional information can be reviewed in the attached March 1st staff report.

DISCUSSION

During the discussion, staff and Mr. Toner responded to questions respecting the cost savings, the public engagement process being used as a template for similar future projects and concerns raised on the electromagnetic fields (EMF) from power lines. It was noted that a medical doctor from Capital Health was present at one of the open house sessions and an indication was given that there is no concern with respect to the existing standards and levels of EMF that are permitted within these types of environment.

Staff further advised that relocating poles in the Coastal Heritage Park entrance area of the Bissett Road section of the transmission line route, to minimize impact on viewplanes was being considered. This will require coordination with BellAliant and Nova Scotia Power Inc. as both utilities' infrastructure is on the identified poles.

Appreciation was expressed to everyone involved in the project for creating a better solution that is more cost effective. Based on the feedback received during the open houses, the Standing Committee agreed that the proposed project design and routing is the best possible outcome for the transmission line.

The Standing Committee passed a motion to forward the recommendations outlined in the March 1, 2012 staff report, with the addition of the following wording to the third recommendation:

And that Nova Scotia Power Inc. agrees to continue to work with HRM staff around detailed design of the line along Bissett Road in order to meet Municipal objectives as outlined in the staff report dated March 1, 2012.

The Standing Committee further passed a motion recommending the Mayor send a letter of commendation to the community members of Harbour East Transmission Project Public Advisory Committee (Cole Harbour, Woodlawn and Eastern Passage), thanking them for their efforts in relation to the positive outcome

BUDGET IMPLICATIONS

The Budget Implications to this report are outlined in detail in the attached March 1, 2012 staff report.

FINANCIAL MANAGEMENT POLICIES/BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Project and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Project and Operating reserves, as well as any relevant legislation.

COMMUNITY ENGAGEMENT

The Environment and Sustainability Standing Committee meetings are open to the public. The Community Engagement undertaken to bring forward the recommendations is outlined in the staff report dated March 1, 2012.

ALTERNATIVES

None.

ATTACHMENTS

1. Staff Report dated March 1, 2012

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Krista Vining, Legislative Assistant, Office of the Municipal Clerk, 490-6519

REVISED

Environment and Sustainability Standing Committee

March 1, 2012

TO: Chair and Members of the Environment and Sustainability Committee

Original signed

SUBMITTED BY:

Peter Stickings, Acting Director, Planning and Infrastructure

DATE:

March 1, 2012

SUBJECT:

Harbour East Transmission Line Update

RECOMMENDATION REPORT

ORIGIN

June 2, 2011, meeting of the Environment and Sustainability Standing Committee, Item 7.2.1

“MOVED by Councillor Watts, seconded by Councillor Sloane, that once the Harbour East Transmission Project - Public Advisory Committee’s open house for the East Dartmouth Transmission Line Review has been completed, that staff come back with a report to the Environment and Sustainability Standing Committee for review and discussion prior to moving forward to Regional Council, in conjunction with a presentation from two Co-Chairs of the Harbour East Transmission Project Public Advisory Committee.”

RECOMMENDATION

It is recommended that the Environment and Sustainability Standing Committee recommend to Regional Council that:

- the process undertaken to identify the route for a new transmission line between the Dartmouth East substation and Eastern Passage is acceptable;
- the proposed project design and routing reasonably reflects values related to community identity and inspirational scenery as gathered during the Cole Harbour Basin: Open Spaces; and
- the utilization of existing power lines in the HRM right-of-way to accommodate the new transmission line is acceptable, providing the project complies with By-Law S-300 (Streets By-Law).

BACKGROUND

In response to concerns expressed by residents, including a petition signed by 247 Cole Harbour residents in support of “No Transmission Lines in Our Neighbourhood (Underground only, if no other alternative is identified)”, Regional Council passed a motion on June 8, 2010, requesting a staff report on the Cole Harbour - Eastern Passage Transmission Project.

On June 17, 2010, Nova Scotia Power Inc. (NSPI) contacted all those who had participated in the Project presentation held at Cole Harbour Place in April. The utility indicated that the feedback from the community was clear and that residents wanted to see:

“... more route options and continue with an active programme of public input.”

As a result, NSPI indicated that they wished to directly involve members of the public through a community consultation committee. This committee would:

“... help to develop potential routes and to evaluate the options. We will be seeking volunteers for the committee to represent the various communities and stakeholder groups involved.”

In addition, NSPI reaffirmed that the project would not be constrained to a fixed schedule and that they will take the time needed to undertake a routing process which will fully engage the community. Regional Council was updated on this change in approach to siting the transmission line at their September 14, 2010, meeting, indicating that a recommendation respecting a transmission line routing would not be forthcoming for a “number of months”.

The Harbour East Transmission Project Advisory Committee was created and held its first meeting on November 2, 2010. It is comprised of 13 members representing the stakeholder communities. It also includes NSPI staff, one of who acted as co-chair with one of the community members, and an HRM representative who acted as resource to the committee. The advisory committee identified 14 different routes which were reviewed. 13 criteria were identified to evaluate the merits of each. Criteria included:

- Community Considerations:
 - Proximity to existing infrastructure;
 - Viewplanes;
 - Impact on Aboriginal land; and
 - Effect on community Resources.
- Landowner Considerations:
 - Degree of Impact
- Parkland and Other Special Areas:
 - Proximity to parkland/Special Areas; and
 - Historic/Archaeological Resources.

- Environmental:
 - Wetlands/lakes/habitat/river crossings; and
 - Special At-Risk terrestrial.
- Technical Feasibility:
 - Ability to feasibly build;
 - Transmission Requirements; and
 - Degree of Reliability Improvement.
- Cost:
 - Total Project Cost

Open Houses were held in October, 2011, to engage the general public and to share the evaluation process and resulting recommended routes.

DISCUSSION

Harbour East Transmission Project Advisory Committee

The route which the Advisory Committee recommends (see Attachment 1) is essentially a roadside route. As the name suggests, these transmission line routes will largely follow the HRM right-of-way from the substation located off Highway 7, to the Forrest Hills Parkway, and along the Forrest Hills Parkway to the Cole Harbour Road. The preferred route will then follow along the Cole Harbour Road east to Bissett Road, continuing down Bissett Road to a point where it will leave the HRM right-of-way and continue cross country to the proposed substation site southeast of the Shearwater base.

The transmission line would be constructed by replacing existing distribution power poles with ones which are about 3.5 metres higher (see Attachment 2). The distribution system would remain as part of the new pole line with the transmission line situated on top of the pole. Installation of the new structures would be carried out live and, therefore, without having to schedule outages for local residents. NSPI has indicated that this would be a pole for pole replacement. The right-of-way would not have to accommodate any additional infrastructure.

HRM played an active role in the community advisory process. A committee comprised of representatives from HRM's Community Development, Community Engagement, Real Property Planning and Utility Coordination departments, interfaced with Nova Scotia Power and provided input to their Harbour East Transmission Line Project initiative. In addition to meeting with NSPI to discuss process and progress, HRM participated in the Advisory Committee's scheduled meetings, providing a resource and monitoring function. In addition, HRM's Right-of-Way Department has provided input to the approach of adding transmission infrastructure to an urban area, based on the level of detail provided, the configuration is considered acceptable as long as the new pole line design does not require additional poles or anchors.

A Regional Council motion Put and Passed (Item 13.5 of the June 10, 2010 Halifax Regional Council meeting) stated, in part:

- “3. Request that the Energy and Underground Services Advisory Committee make a recommendation at a future meeting on the preferred option (which might or might not be a Nova Scotia Power Inc. option).”

As noted, the process to select a route for an extension of the transmission system to the Eastern Passage area from a Cole Harbour substation has been a significant departure from the previous attempt 18 months ago. In addition, utilizing the municipal Right-of-Way (ROW) to site this transmission infrastructure and incorporating that infrastructure with an existing overhead distribution power line, is a new approach to minimizing the impact of such expansion in the urban core. The stakeholder communities have been provided an opportunity to participate in an advisory committee tasked with making a recommendation regarding a preferred route. For the most part, they took full advantage of that invitation. The process has been thorough and has been transparent. It was co-chaired by NSPI and a community representative who provided very few restrictions. The recommended routes are supported by the committee, and the general public's responses are favourable to both process and the committee's recommendation. Due to the fact that a large portion of the proposed route is on municipal land, this project will require municipal support. By-Law S-300 - Respecting Streets, provides the mechanism for project review and approval. In addition, clause (4) of Section 30 – Obstructions, states that:

“The Engineer may refuse to issue a Street and Services permit when it is in the public interest to do so.”

If a difference of opinion arises respecting the siting of the transmission line on municipal ROW, complaints can be filed with the Nova Scotia Utility and Review Board (NSUARB) and the final decision rests with them.

As a final comment, Nova Scotia Power estimates the cost of this transmission project to be approximately \$12.0 million. The estimate for the original transmission line, as proposed 18 months ago, was \$20.0 million. Assuming that these figures represent similar scope of work, the end result is a project which has support from the community and a 40% savings. In addition, NSPI and HRM consider that this process provides a very reasonable template for future similar projects being applied to an urban application.

Cole Harbour Open Spaces Plan

In July, 2011, the Cole Harbour Basin Open Spaces Study was initiated by HECC and MDVCCC to establish goals and objectives for the planning and development of the area's open space network. The Open Space Study will provide a better understanding of the link between open space and the cultural, economic and environmental health of the area. The need for a proposed transmission line and the impact of the routing of that transmission line, were identified within the context of impact on open spaces. In particular, the close proximity to the Coastal Heritage Park and HRM's Rehab property has generated additional feedback for Nova Scotia Power and the community advisory committee to consider. This feedback, recorded as Great

Open Spaces, helps to form our identity through inspirational scenery and displaying our heritage landscapes and structures.

As a means of minimizing the visual impact of the power line on the viewplane of the Coastal Heritage Park and the Cole Harbour Estuary from the Bissett Road streetscape, NSPI have agreed to consider relocating the pole line to the west side of Bissett Road in the area of the Coastal Heritage Park's road frontage. It is not anticipated that there will be measurable cost impact but the change will require BellAliant agreement, as their infrastructure will need to be relocated as well. In addition, the utility agreed to include input from the municipality on aspects of the detailed design of the transmission line, which could additionally help to reduce the visual impact on what is being identified as the cultural core of the Cole Harbour Basin area of HRM and part of an important open space corridor linking Cole Harbour Place with Rainbow Haven Provincial Park.

BUDGET IMPLICATIONS

No budget implications are anticipated as a result of this utility initiative.

FINANCIAL MANAGEMENT POLICIES/BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Project and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Project and Operating reserves, as well as any relevant legislation.

COMMUNITY ENGAGEMENT

Nova Scotia Power and community stakeholders established the Harbour East Transmission Project Public Advisory Committee to oversee an evaluation of potential routes. This committee is comprised of 13 members representing the three (3) stakeholder communities identified, including:

- Cole Harbour (8 members);
- Eastern Passage (3 members); and
- Woodside (2 members).

Over the last 12 months, the Advisory Committee:

- Held 15 Committee meetings;
- Undertook 2 field trips to transmission routing areas;
- Considered 15 transmission option routings;
- Undertook an independent study of the Bissett Road Viewplanes;
- Received presentations from HRM(Regional Planning Issues), and Capital Health Authority (Electric and Magnetic Fields);
- Provided updates to Municipal Councillors and HRM staff; and

- Hosted 4 Open Houses in stakeholder communities including Dartmouth, Cole Harbour and Eastern Passage.

In addition, Nova Scotia Power created a web site on its NSPI site and posted copies of all meeting minutes, routing process, maps, viewplane studies, presentations and Open House schedule.

ATTACHMENTS

Attachment 1: Report of the Harbour East Transmission Project Public Advisory Committee

Attachment 2: Profile of Transmission Line Pole

A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/cc.html> then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Angus Doyle, P.Eng., Utilities Coordination Manager, 490-5019

Original signed

Report Approved by: Richard MacLellan, Manager, Energy and Environment, 490-6056

REPORT
of the
HARBOUR EAST TRANSMISSION PROJECT
PUBLIC ADVISORY COMMITTEE

November, 2011

FOREWARD

Nova Scotia Power would like to thank the members of the Harbour East Public Advisory Committee for their extensive and productive work. Because of their dedicated commitment to the project over a one year period, the Committee has greatly assisted in identifying a preferred routing for the proposed transmission line. Committee members exhibited a high degree of local knowledge, innovative ideas and professional teamwork which made it possible to achieve this outcome.

EXECUTIVE SUMMARY

Based on a 2007 Planning Study, Nova Scotia Power (NSP) identified an emerging need for additional transmission line capacity in the Dartmouth, Cole Harbour and Eastern Passage areas (Harbour East). Since the time of the study, system demands have increased with more new homes and businesses connected. Two evident examples include the development in the Baker Drive area and the waterfront King's Wharf project. Halifax Regional Municipality (HRM) has announced expansion of sewage treatment facilities in the area and modest growth is expected to continue. To address the existing and future transmission requirements in the area, NSP proposed the construction of a new 138 kV transmission line from the Dartmouth East Substation to a new substation to be located near the corner of Hines and Caldwell Roads. The initial routing proposed at a public meeting in May 2010 had not benefited from significant public consultation and was not well received by the community. Residents from the area formed a group and developed a website to better coordinate their efforts in response to the proposed route. Upon careful reflection and also based on discussions with elected officials, a group of concerned citizens and other members of the general public, NSP decided to form a Public Advisory Committee (Committee) with representatives from Cole Harbour, Dartmouth and Eastern Passage to provide input on routing options.

The Committee spent time understanding the need for the project, including land development patterns in Harbour East, recent information on housing starts, electrical peak load data, heating trends in new home construction and HRM information on planning goals, population growth, infrastructure expansion and protected areas designation. The Committee then identified more than 12 options that might address those requirements. Using evaluation criteria, information gathered from experts and from field visits to the existing transmission system, the Committee eliminated less apt options and eventually narrowed their consideration down to two alternatives.

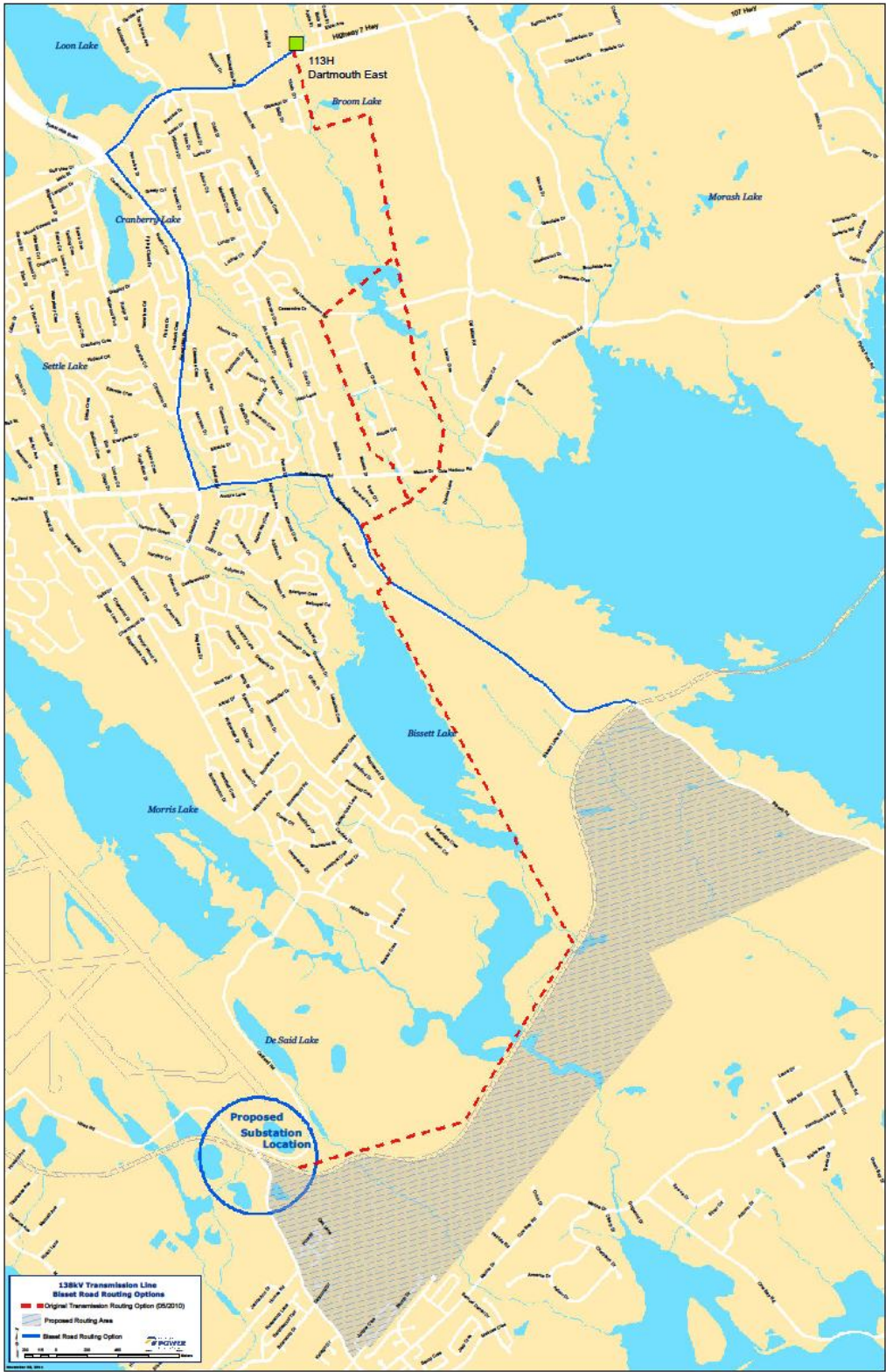
Four open house sessions were held to provide an opportunity to inform the local communities about the work of the Committee and to seek additional public input.

Following further discussion and deliberation, the Committee identified a recommended routing as follows:

- Dartmouth East Substation roadside west on Highway #7 to Forest Hills Parkway,
- roadside south along Forest Hills Parkway to Cole Harbour Road
- roadside east on Cole Harbour Road to Bissett Road
- roadside south on Bissett Road to area just south of the Trail
- southwest across country south of the Shearwater Flyer Trail to a new substation located near the intersection of Hines Road and Caldwell Road.

Of note, this final proposed routing is almost completely different from the originally proposed route. NSP is prepared to accept the Committee's recommended routing (see Executive Summary Figure).

Committee Recommended Routing



Figures and Tables

Figure 1	Initial Route Proposed in May 2010
Figure 2	Need for Additional Transmission Capacity
Figures 3.1 – 3.5	Initial Options Rebuilding Along Existing Lines
3.1	Rebuild on Existing 69 kV Loop
3.2	Add Substation Capacity and Express Feeders
3.3	Rebuild Dartmouth Crossing to Imperial Oil
3.4	Rebuild Dartmouth Crossing to Imperial Oil, new to Eastern Passage
3.5	Rebuild Dartmouth Crossing to Woodlawn, Add Substation Capacity
Figures 3.6 – 3.9	Initial Options with New Corridors
3.6	New Dartmouth East to Eastern Passage (original route)
3.7	New Line via Salt Marsh Trail
3.8	Tufts Cove to Imperial Oil along Harbour
3.9	Build Line across Harbour
Figures 3.10 – 3.12	Roadside Pathways
3.10	Roadside Dartmouth East via Bissett Road to new Substation
3.11	Dartmouth East crosscountry to Cole Harbour Rd, Roadside Caldwell
3.12	Roadside Dartmouth East via Caldwell
Figures 4.1-4.3	Themes for Remaining Options
4.1	Options along Existing 69 kV Loop
4.2	Roadside Options near Baker / DND
4.3	Roadside via Caldwell or Bissett
Figures 5.1 & 5.2	Sightline Portrayals
5.1	From High ground looking Across the Salt Marsh
5.2	From Marsh looking Inland
Figure 6	Wetland Information North of the Trail
Figure 7	Two Options Presented at Open Houses

Figure 8 **Final Recommended Routing**

Table 1 **Rating Scheme for Initial Application of Routing Criteria**

Table 2 **Results of Initial Rating**

TABLE OF CONTENTS

	Foreward
	Executive Summary
1	Introduction
2	Formation of the Public Advisory Committee
3	Demonstrating Need for the Project
4	Identification of Routing Options
5	Identification And Application of Initial Routing Criteria
6	Subject Expertise Input
7	Additional Discussion and Analysis – Defining 2 Main Options
8	Public Engagement and Input
9	Final Deliberations And Committee Recommendation
10	Appendix
11	Figures and Tables

1 INTRODUCTION

Based on a 2007 Planning Study, Nova Scotia Power (NSP) identified an emerging need for additional transmission line capacity in the Dartmouth, Cole Harbour and Eastern Passage areas (Harbour East). Since the time of the study, system demands have increased with more new homes and businesses connected. Two evident examples include the development in the Baker Drive area and the waterfront King's Wharf project. Halifax Regional Municipality has announced expansion of sewage treatment facilities in the area and modest growth is expected to continue. To address the existing and future transmission requirements in the area NSP proposed the construction of a new 138 kV transmission line from the Dartmouth East Substation to a new substation to be located near the corner of Hines and Caldwell Roads.

Historically, consideration of adding transmission capacity to the area dates back to the early 1990s, around the time that NSP was privatized. The utility was able to make other upgrades over the ensuing years to address the area's increasing electricity needs. Recently, NSP's analysis indicates that the existing system is approaching a state that requires additional transmission capacity to maintain reliability.

The initial routing (see Figure1) proposed at a public meeting in May 2010 had not benefited from significant public consultation and was not well received by the community. Residents expressed concern regarding proximity of the line to residential homes and properties and to trails and parklands. Residents made it clear that they wanted to see more route options, as well as a mechanism for public input. Residents formed a group and developed a website to better coordinate their efforts in opposing the route as proposed.

Upon some careful reflection and also based on some discussions with elected officials, the group of local residents and other members of the general public, NSP decided to form a Public Advisory Committee (Committee) with representatives from the Cole Harbour, Dartmouth and Eastern Passage. The Committee would provide input to the routing process for the proposed Harbour East line.

2 FORMATION OF THE PUBLIC ADVISORY COMMITTEE

Nova Scotia Power used the summer and early fall period of 2010 to consult further with elected officials, the group of residents and other members of the general public. It was important to have adequate representation of diverse views and differing constituencies including but not limited to:

- People from Dartmouth, Cole Harbour and Eastern Passage
- Some representation from those who originally raised concerns
- Representation from Parks, Trails, Agriculture, and users of community resources

On that basis, the Committee was created with its original 14 citizen representatives. Appendix 1 contains the list of those members, including those who left the Committee due to personal or time commitments.

NSP designated its Director of Environmental Services (Terry Toner) as Co-Chair of the Committee and provided technical and logistical support as necessary to the Committee process.

From the outset, Halifax Regional Municipality (HRM) staff had representation at the meetings, most often its Manager of Utilities Coordination. This allowed for expert input from HRM throughout the process, enhancing the likelihood of development of a Committee recommendation that well reflected HRM policy and goals.

The first meeting of the Committee was held Nov 2nd, 2010 at Cole Harbour Place. Initial terms of reference were discussed and the committee decided on the general approach for the balance of their work. Over the course of a year, the Committee met 17 times and conducted two fieldtrips to view information and understand the challenges of potential routing options.

The remainder of this report outlines the steps taken by the committee and presents a final recommendation for routing.

3 DETERMINATION OF NEED FOR THE PROJECT

The initial task of the Committee was to review relevant material to understand the need and extent of the proposed project. NSP provided information outlining the past history of development of the electrical system in the area. The Dartmouth area has been supported for decades by two complimentary 69 kV lines. In addition, two 138 KV lines run from Tufts Cove along the northeast and leading to Dartmouth East Substation with one line proceeding down the Eastern Shore. The Dartmouth East substation has been central in providing local service in the Cole Harbour area.

The Committee was also presented with information demonstrating the need for the proposed project, which can be summarized as follows:

- Harbour East Planning Projections and Recent Growth
 - Over a 20 year period (2006-2026), an HRM-planning study projected population growth of over 65,000 persons and 45,000 residential housing units.
 - In the five year period 2005-2010, Harbour East growth centres of interest cited in HRM's Regional Municipal Planning Study experienced an estimated 1,374 new residential housing starts: Woodside (91 units), Russell Lake (629 units), Morris Lake (25 units), Cole Harbour (283 units), and Eastern Passage (346 units).
- Heating Trends in Nova Scotia New Home Construction
 - Dominance of electricity:
 - Since 2006, all-electric space heating has increased its market share from 43% to 60%. Including less intensive forms of electric heat (i.e. heat pumps, electro-thermal storage), total NS space heating market share 83%.
 - Since 2006, electric hot water heating market share has increased from 73% to 90%.
 - Heavier reliance on all-electric homes (space and water heating) increases potential to overload lines/transformers and drive increasingly-higher system peaks.
- Harbour East Potential Development
 - HRM Secondary Planning Strategy from 2009 indicates approximately 3,000 acres suburban lands in Harbour East are committed to allowing residential development.
Dependent on the extent that Morris Lake could be built out, forecasted population growth in Harbour East to the year 2026 could be between 4,000 and 16,000 persons.

Development and growth has occurred in all parts of Harbour East and the existing power infrastructure is approaching the limits of its capacity to provide reliable power under full load conditions. The particular challenges are shown in Figure 2 and can be summarized as follows:

- Forecasted electricity loading on the 69 kV Dartmouth Loop is projected to exceed capacity by 2013/2014 winter peak
- Loads on both Imperial Oil (58H) and Dartmouth East (113H) transformers exceed contingency capacities
- Load is growing in all areas (including Eastern Passage) and transmission assets are already fully utilized.

The community's initial impressions were that the need for additional transmission capacity was predominantly due to growth in Eastern Passage so the proposed line would only benefit that area. In fact, the proposed new line and substation will provide transmission capacity relief in all three areas, namely Dartmouth, Cole Harbour and Eastern Passage.

After discussion spanning three meetings, the Committee concluded that there was indeed a need for additional transmission capacity in Harbour East that would be best served by a new 138 kV transmission line and a new substation in the southwest part of the area.

4 IDENTIFICATION OF ROUTING OPTIONS

The Committee carried out a comprehensive search for potentially viable routing options to meet the defined need. The Committee considered:

- Rebuilding along all or part of the existing 69 kV lines
- Adding capacity at substations and building more feeders
- Finding new routes through Cole Harbour
- Developing a new route easterly along the #7 Highway and then along the Salt Marsh Trail
- Building a line along the Dartmouth shore of Halifax Harbour from the Tufts Cove Generating Station
- Crossing Halifax Harbour from the Lower Water Street substation
- Replacing existing roadside poles that carry distribution lines only with taller poles that would accommodate both distribution and new transmission lines
- Building new electricity generation infrastructure in the area
- Deferring development through electricity conservation and energy efficiency programs (Demand Side Management)

Citizen volunteers on the Committee suggested the idea of roadside options on the first field trip. NSP subsequently did some initial evaluation and determined it to be a potential solution. In fact, some successful examples of roadside transmission exist in other cities in the Maritimes.

The Committee eventually whittled the initial list down to 12 options in three categories. There were five options primarily involving rebuilding on existing 69 kV lines, four options that would be built mainly along new corridors, and three options associated with building roadside atop existing distribution lines.

The five options dealing with rebuilding on Existing Lines are described as follows (see Figures 3.1 to 3.5):

- | | |
|----------|---|
| Option 1 | Upgrade the 69 kV loop to include a 138 kV Line added to the 69 kV line
Transformers and new feeders would be added at Imperial Oil and Dartmouth East Substations |
| Option 2 | Add capacity at Dartmouth East Substation
Add new express feeders into Eastern Passage |
| Option 3 | Rebuild the existing line to double circuit from Dartmouth Crossing to Imperial Oil (138 kV and 69 kV) |

Establish a new 138 – 25 kV distribution supply at Imperial Oil Substation

- Option 4 Rebuild the existing transmission line to double circuit from Dartmouth Crossing to near Imperial Oil (138 kV, 69 kV)
Extend 138 kV to a new 138 kV – 25 kV distribution supply closer to future load centre in Eastern Passage
- Option 5 Rebuild the existing transmission line to 138 kV from Dartmouth Crossing to Woodlawn, convert the Woodlawn Substation to 138 kV supply
Maintain 69 kV as it is from Woodlawn to the Imperial Oil Substation and add transformer capacity at the Imperial Oil and Dartmouth East Substations

The four options dealing with new corridors are described as follows (see Figures 3.6 to 3.9):

- Option 6 Build a new 138 kV line from Dartmouth East to new substation in Eastern Passage area (revised somewhat from original proposal).
- Option 7 Build a 138 kV line from Dartmouth East, head east and then south to Salt Marsh Trail, west to Bissett Road, then west to new substation
- Option 8 Build a new 138 kV line from Tufts Cove to a new 138 kV – 25 kV substation at Imperial Oil substation
- Option 9 Build a new underwater 138 kV line from Halifax Lower Water Street Substation to new 138 kV – 25 kV substation at Imperial Oil.

The three options dealing with roadside pathways are described below (see Figures 3.10 to 3.12):

- Option 10 Build a new 138 kV line from Dartmouth East roadside to Bissett Road, Bissett Lake Road and then cross country to a new substation
- Option 11 Build a new 138 kV line from Dartmouth East cross country to Cole Harbour Road and then roadside west to Caldwell Road, then roadside to a new substation
- Option 12 Build a new 138 kV line from Dartmouth East roadside along #7 Highway then roadside down Forest Hill Parkway, roadside along Cole Harbour Road to Caldwell Road and then roadside down Caldwell Road to a new substation

Two options that did not involve transmission assets were also tabled to be evaluated: New Electricity Generation in the area and Demand Side Management.

5 IDENTIFICATION AND APPLICATION OF INITIAL ROUTING CRITERIA

The Committee engaged in extensive discussion about the type and extent of option evaluation criteria. Broad categories were identified including community considerations, visual impacts, landowner considerations (including proximity of houses to the line), technical feasibility, cost, ability to improve reliability and meet planning requirements, trails and parklands, and environmental criteria.

With such a diversity of options, it was decided that use of high level criteria would be appropriate for this phase of selection. Each option was rated using green, yellow, red or blue. Generally a rating of Green would indicate Low or No Risk or Concern. Yellow would signify Some Risk But Mitigable. Red would indicate a Higher Risk or Identified Effect and Blue would denote a situation exceeding acceptable criteria, eliminating the option. Table 1 provides a more detailed explanation of the rating scheme.

Table 2 presents the results of the initial evaluation of the 12 options.

Option 2 was deemed to not meet the planning requirements as it did not actually improve reliability under all circumstances including the longer term requirements (15 years) for the area and the option was therefore eliminated.

Options 8 and 9 were assessed as being considerably more costly than the remaining options and were therefore eliminated.

Option 7 was longer in length, more costly and would significantly overlap the Salt Marsh Trail and was therefore eliminated.

Option 5 would require considerable disruption for residents along the 69 kV lines and in the area of the Woodlawn substation. This option had shortcomings regarding addressing electrical needs. Therefore the option was eliminated.

Option 6 too much resembled the original option brought forward to the public in May 2010 with its features of concern so it was eliminated.

The New Generation Option was ultimately dismissed because it did not solve the transmission overloading issues and would not meet the planning requirements.

Demand Side Management was removed as a full option, but and instead was considered a factor that might change the timing of construction.

Additional discussion within the Committee led to consideration of the remaining options, their variants and hybrids within in three themes:

1. Options primarily along existing 69 kV lines (Figure 4.1). Further analysis and discussion focused on disruption of properties, limited real estate for the new line, and ability to fully address transmission goals.
2. Options dealing primarily with roadside with more limited new routing along Baker Drive, Portland Estates and DND (Figure 4.2). Further analysis and discussion focused on cost, availability of DND route, proximity of lines to houses and space in some areas.
3. Options dealing primarily with roadside along Bissett and Caldwell Roads (Figure 4.3). Further analysis and discussion focused primarily with sightlines, parkland, trails and wetlands.

6 SUBJECT EXPERTISE INPUT

The Committee next benefited from additional detailed input and information on four key topics, namely Parks & Trails, EMF, Sightlines and Wetlands.

Parks & Trails

Throughout the meetings, the Committee received timely and useful information on the work done by the Cole Harbour Parks and Trails Association. This included a description of the more recent upgrades and imminent plans. Representatives from HRM planning staff attended one of the Committee meetings to outline the existing and future plans for the area as the Regional Park initiative becomes more fully implemented. Particularly enlightening was information for the Ross Road area and along Bissett Road.

Electric and Magnetic Fields (EMF)

Understanding that some people have concerns about whether or not EMF poses a potential health issue, the Committee spent time over two meetings discussing the subject. NSP staff outlined scientific electrical theory to provide further knowledge on the topic and also carried out some measurements using a magnetic field reading device to show the relatively low levels found in our everyday environment. NSP also described that an approach utilizing roadside transmission would actually reduce levels of EMF from what currently exists with the distribution lines only. The Committee saw this as a very positive option – if reversing the phasing between the transmission and distribution lines along roadside poles results in a

reduction of existing levels of EMF, then such an approach would significantly mitigate these concerns.

To further assist the Committee in understanding EMF, Dr. Gaynor Watson-Creed, Chief Medical Officer for Capital Health District attended a Committee meeting. She was accompanied by Linda Passerini, Environmental Health Consultant. Dr. Watson-Creed made a presentation to the group followed by an extensive Question and Answer session. The main points affirmed by Dr. Watson-Creed included:

- Many studies have taken place and continue to be carried out on this topic.
- There is no substantiated evidence of a link between EMF and detrimental health effects
- Acknowledging the concerns held by some, a precautionary approach is a reasonable way to proceed
- The design mitigation option (i.e. reverse phasing of distribution and transmission lines) outlined by NSP and proposed for the recommended route is in line with that precautionary approach.

Sightlines

In considering a possible routing in the Bissett Road area, some discussion took place about the possible effect on Sightlines if the new line was placed on higher poles through that area. NSP commissioned a study carried out by Conestoga-Rovers & Associates to simulate the potential look from key sightlines (one looking down from the former Rehab Property and one looking at the area from inside the Cole Harbour Heritage Park). Figures 5.1 and 5.2 visually present the main findings. Following some discussion of the materials, the Committee felt that Sightlines would not be a major issue going forward in choosing a route.

Wetlands

For routing that went down Bissett Road, there would be a need to eventually cut across country either northwest or southeast of the existing trail to terminate at the new substation in the vicinity of Hines Road and Caldwell Road. Initial examination of that area indicated that there was considerable wetland habitat. NSP carried out some initial fieldwork, especially on the northwest side of the trail, to further understand the routing challenges that might be present. Figure 6 presents a summary of that initial data gathering.

NSP determined that, while the land was somewhat wetter on the western side of the Shearwater Flyer trail, either side of the trail could support a transmission line. The information gathered would be used to refine routing, pole placement and other line design parameters.

The information obtained by the Committee on these specific topics was used to assist in further defining appropriate routing choices.

7 ADDITIONAL DISCUSSION AND ANALYSIS – DEFINING 2 MAIN OPTIONS

In considering options for rebuilding on the path of the existing 69 kV lines in the Woodlawn Substation area, the Committee revisited some of that area via a field trip and determined that the disruption and effects for landowners and the community would be excessive. The lines would be difficult to service and would not provide long term transmission capacity improvements. The Woodlawn Substation itself has no room for any real areal expansion and getting new lines in and out that location would be extremely difficult. Knowing that there were better options still under consideration, this series of options was eliminated.

In evaluating the remaining options/suboptions, the discussion focused on two areas: the routings north of Cole Harbour Road; and the pathways south of that road.

In the upper area, there were two main routes: 1) through the wooded area near Ross Road, or 2) roadside starting at the Dartmouth East substation, proceeding west along #7 Highway to Forest Hills Parkway (FHP), south along FHP to Cole Harbour Road. The upper route through woods or along existing trails was determined to be in some conflict with plans for future parkland and trails. The Committee decided that the preferred option for this upper routing would be roadside, eliminating the alternative through the woods.

For the southern part of the routing, four options were discussed:

- 1) Cole Harbour Road to Bissett Road, south on Bissett to an area near the Trail and then across country either northwest or southeast of the trail to the new substation
- 2) Cole Harbour Road to Caldwell Road and then down Caldwell to the new substation
- 3) Cole Harbour Road to Baker Drive and then along the Shearwater property to the new substation.
- 4) Cole Harbour Road to Baker Drive, to an area near Imperial Oil, along Pleasant Street and then along Hines Road to the new substation.

Another routing option was suggested by the Committee during the second field trip. It involved the lands that run through Department of National Defence (DND) Shearwater property alongside Morris Lake/MacDonald Beach. NSP subsequently met with DND to understand the opportunities and challenges with the Shearwater route. The main findings of that discussion were:

- It would take a minimum two years to get a decision, with no guarantee of a workable outcome
- Shearwater retains flight pathways and this could impose unacceptable height restrictions for the poles
- Access to the line for maintenance would require permission each time, a condition not acceptable for the project

On the basis of these restrictions, the Committee eliminated this option.

The Caldwell Road option, while a shorter route, would see pole reconstruction taking place very close to houses. Traffic in the area is significant and this would greatly impact both commuter times and construction scheduling. There are also some more sensitive facilities including schools and First Nations lands. Therefore, the Committee eliminated this option.

The Baker Drive-Pleasant Street option was retained for further consideration but had some challenges:

- Compared with the preferred option, this route is three km longer, adding at least \$2 million in development costs.
- There are more than 20 distribution services that are underground and in concrete at the pole along this routing that would require significant re-build.

The Bissett Road option, with sightline considerations resolved, became the focus as the most likely preferred option. One item that was still in discussion was the cross-country routing along the southern area. It was decided to keep both subroutes under consideration until after the public open house sessions.

Figure 7 outlines the two options that were still under consideration prior to the public open house sessions.

8 PUBLIC ENGAGEMENT AND INPUT

Throughout the year of committee work, several mechanisms were used to provide timely updates to elected officials and the public, including:

- Briefings for elected officials periodically throughout the project
- Establishment and maintenance of a website with updated information on meetings.
- Committee members having individual discussions with people in their areas
- Development of a mid-year update
- Interviews with the media as requested

After almost a year of work, the Committee (including NS Power) hosted a series of four Open House Sessions to provide an opportunity for the public to see the results of the Committee's work and provide comments. Sessions were held as follows:

October 12 (Wednesday)	Dartmouth Super 8 Motel, 6-8 pm
October 13 (Thursday)	Cole Harbour Place, Harbour Room, 6-8 pm
October 23 (Sunday)	Cole Harbour Place, Harbour Room, 2-4 pm
October 23 (Sunday)	Buffalo Club, Eastern Passage, 6-8 pm.

Over the course of the four sessions, more than 100 people attended, viewed the materials, sought clarifications from the Committee and provided feedback. Comments were also registered via comment cards provided at the sessions, as emails through the project website (www.nspower.ca/harboureast), or after the sessions in discussions with committee members.

A total of 52 comment cards were received. The predominant views can be summarized as follows:

- Many people (22) expressed appreciation for the process and the work of the Committee; they were impressed with the amount of work done and the insight shown in coming up with recommended options.
- Most people (44) either preferred or accepted the Bissett Road route
- In the southern area of the Bissett Road route, 22 people favoured the south east cross country option.

The Committee met following the Open House sessions to review the learnings and public comments. The Committee viewed the predominant comments as supporting the work done by the Committee.

9 FINAL DELIBERATIONS AND COMMITTEE RECOMMENDATION

Two final meetings were held by the Committee to review all information and to develop a recommendation for routing. The Committee members considered all of the information, discussions, input and analysis, weighing any issues or concerns, and concluded with the following conclusions and consensus recommendations:

1. Based on all information presented and reviewed, the Public Advisory Committee recommends a preferred routing for the proposed 138 kV transmission line and substation as follows (See Figure 8):
 - Dartmouth East Substation roadside west on Highway #7 to Forest Hills Parkway,
 - roadside south along Forest Hills Parkway to Cole Harbour Road
 - roadside east on Cole Harbour Road to Bissett Road
 - roadside south on Bissett Road to area just south of the Trail
 - southwest across country south of the Shearwater Flyer Trail to a new substation located near the intersection of Hines Road and Caldwell Road.
2. Nova Scotia Power will work with landowners to identify the final route from Bissett Road to, and including, the new substation. All efforts will be made to ensure that the final routing/siting is consistent with principles and criteria agreed upon by the Committee.
3. Nova Scotia Power will post this report on their website to inform the public of the final recommendations.

10 APPENDIX – List of Public Advisory Committee Members

David Betts (resigned Spring 2011)

Erika Burger

Val Conrad

Ron Cooper

Phil Crowdis

Susan Dunn

Jay Gupstill

Melvin Harris

Val Merchant (resigned Summer 2011)

Jim Tudor (resigned Summer of 2011)

Art Vidito (Co-Chair)

Robert Wallace (resigned Fall 2010)

Kate Watson

Eleanor Wint (resigned)

11 FIGURES AND TABLES

Figure 1 – Initial Route Proposed in May 2010

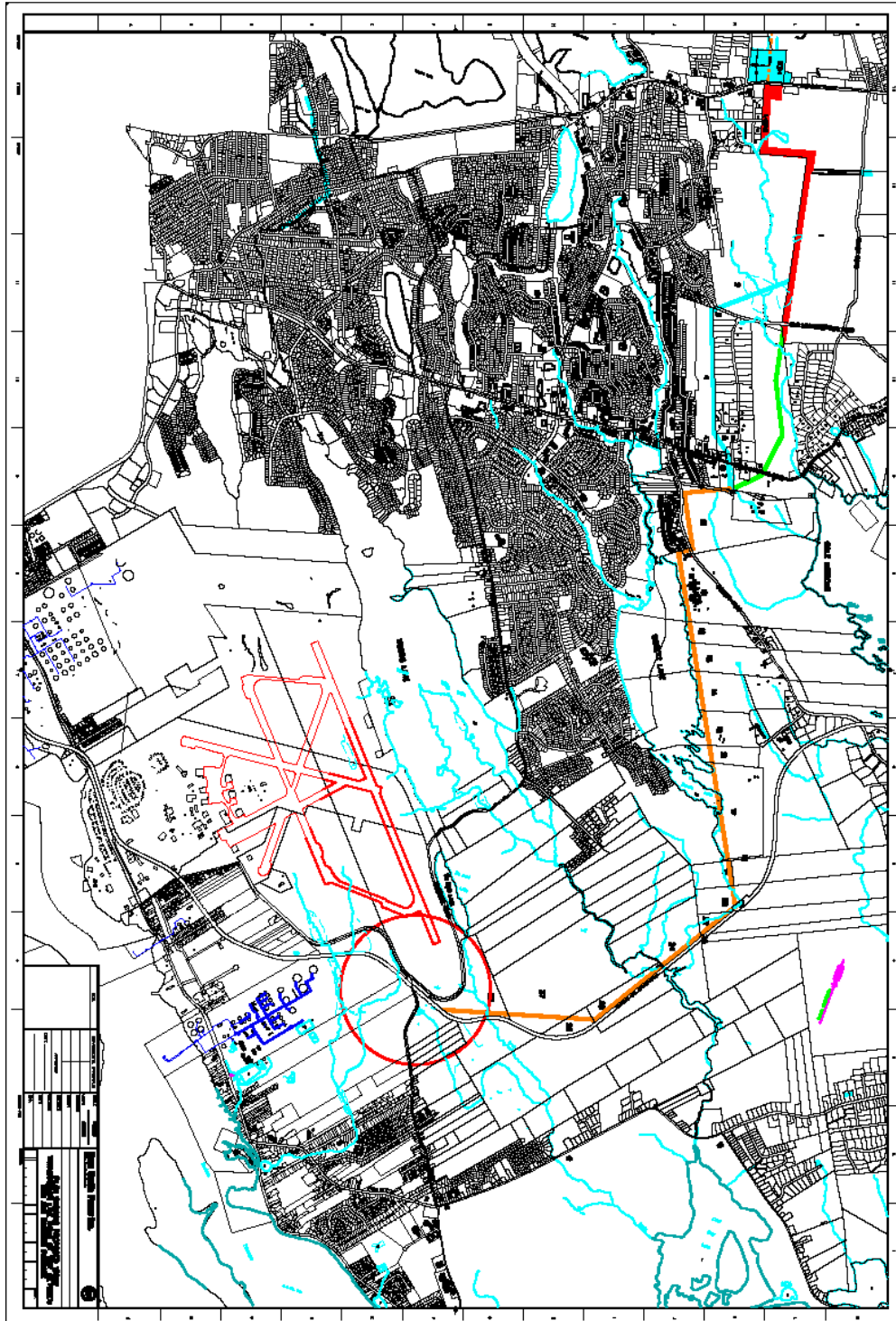
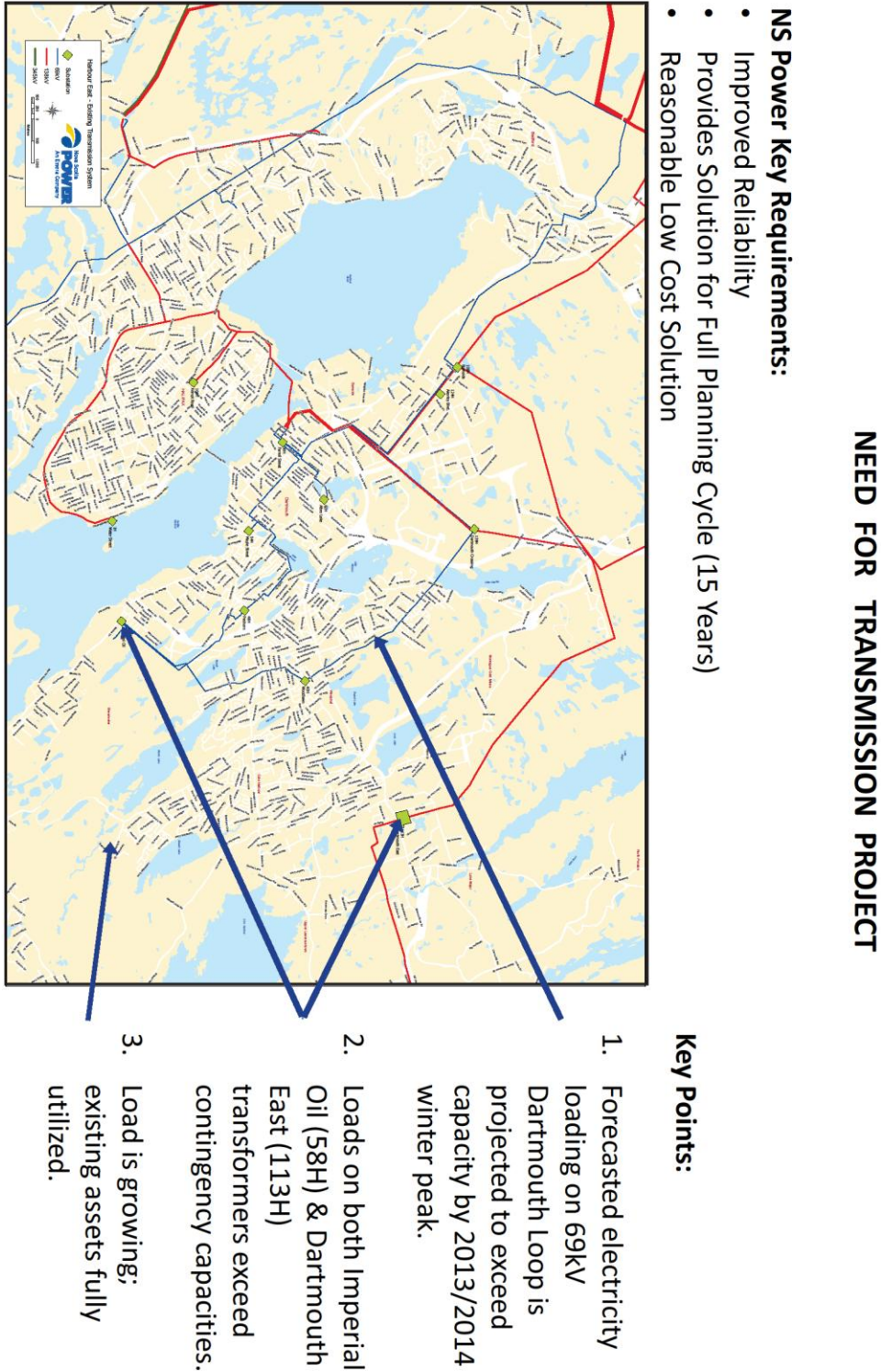


Figure 2 – Need for Additional Transmission Capacity



Figures 3.1 – 3.5 Initial Options Rebuilding Along Existing Lines

Figure 3.1 - Rebuild on Existing 69 kV Loop



Figure 3.2 – Add Substation Capacity and Express Feeders

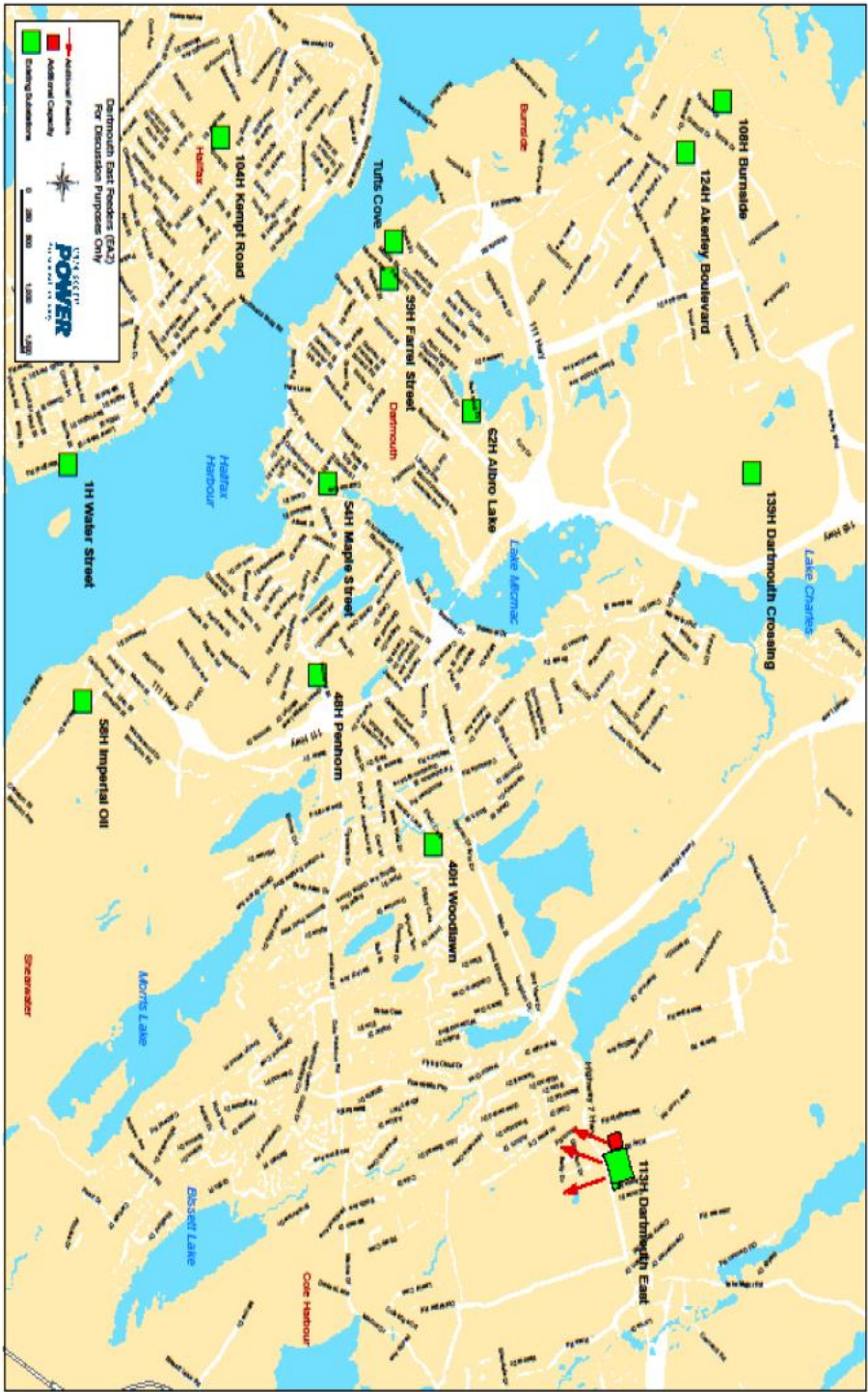


Figure 3.3 – Rebuild Dartmouth Crossing to Imperial Oil



Figure 3.4 – Rebuild Dartmouth Crossing to Imperial Oil, New to Eastern Passage

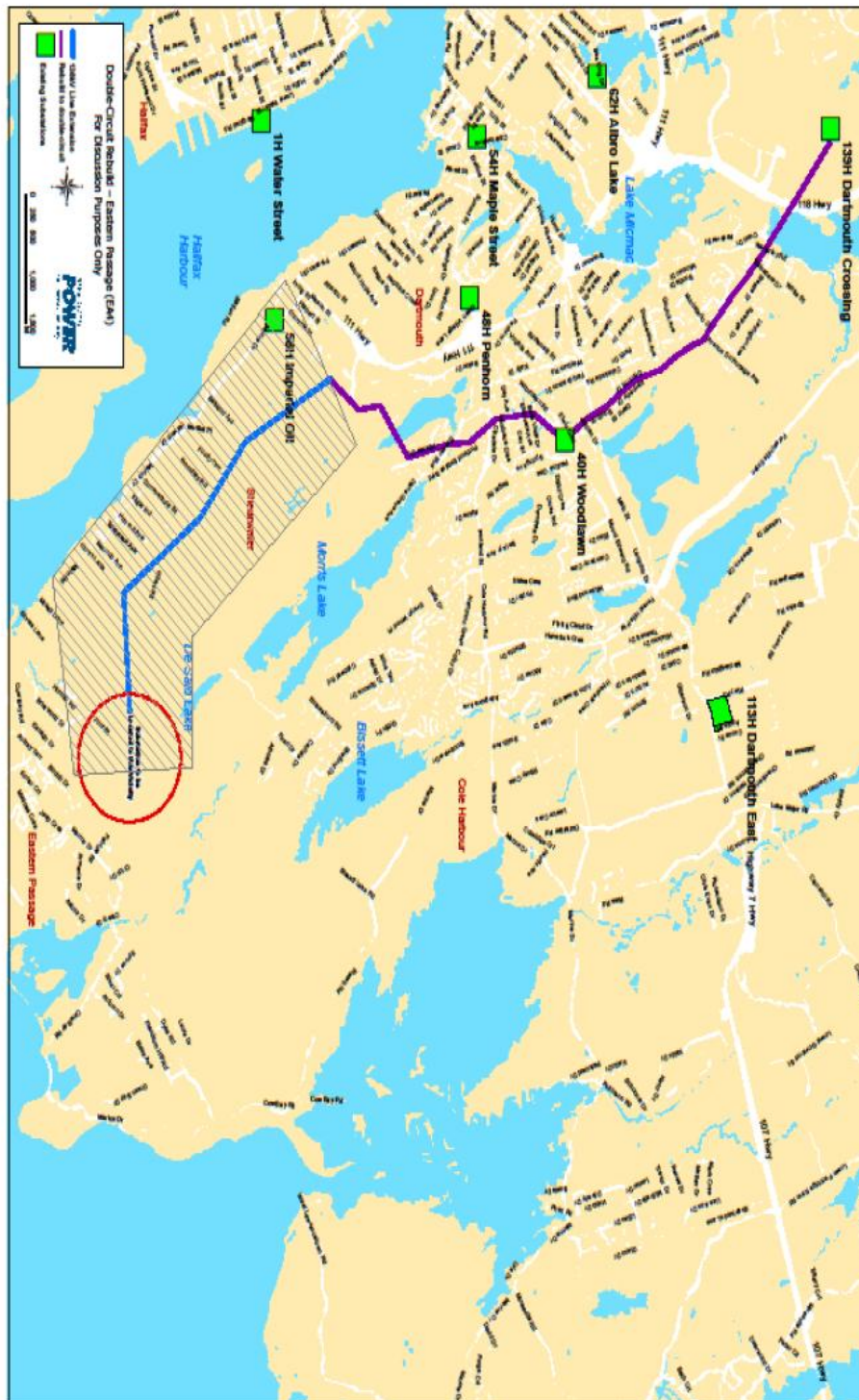
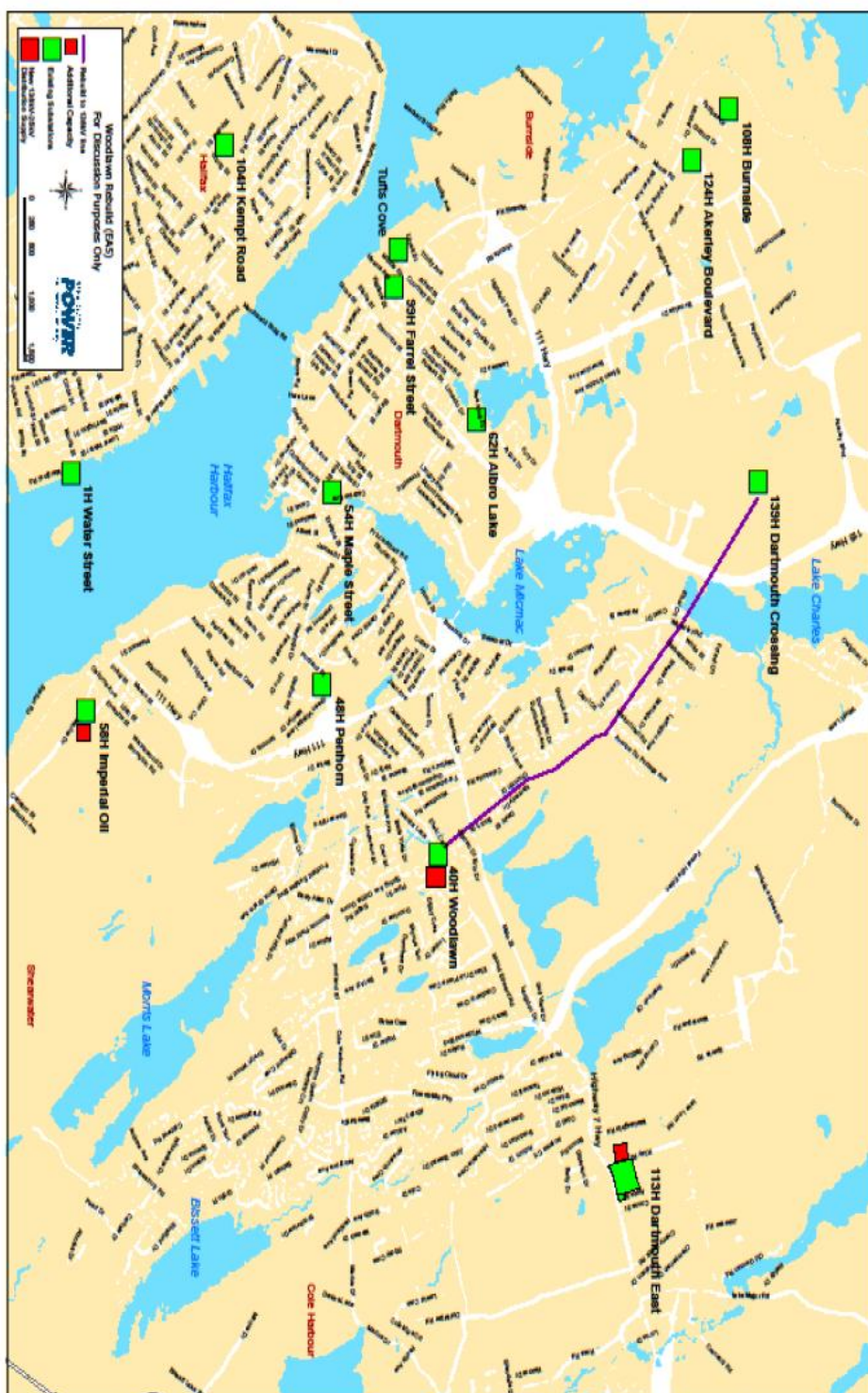


Figure 3.5 – Rebuild Dartmouth Crossing to Woodlawn, Add Substation Capacity



Figures 3.6 – 3.9 Initial Options with New Corridors

Figure 3.6 – New Dartmouth East to Eastern Passage (original route)

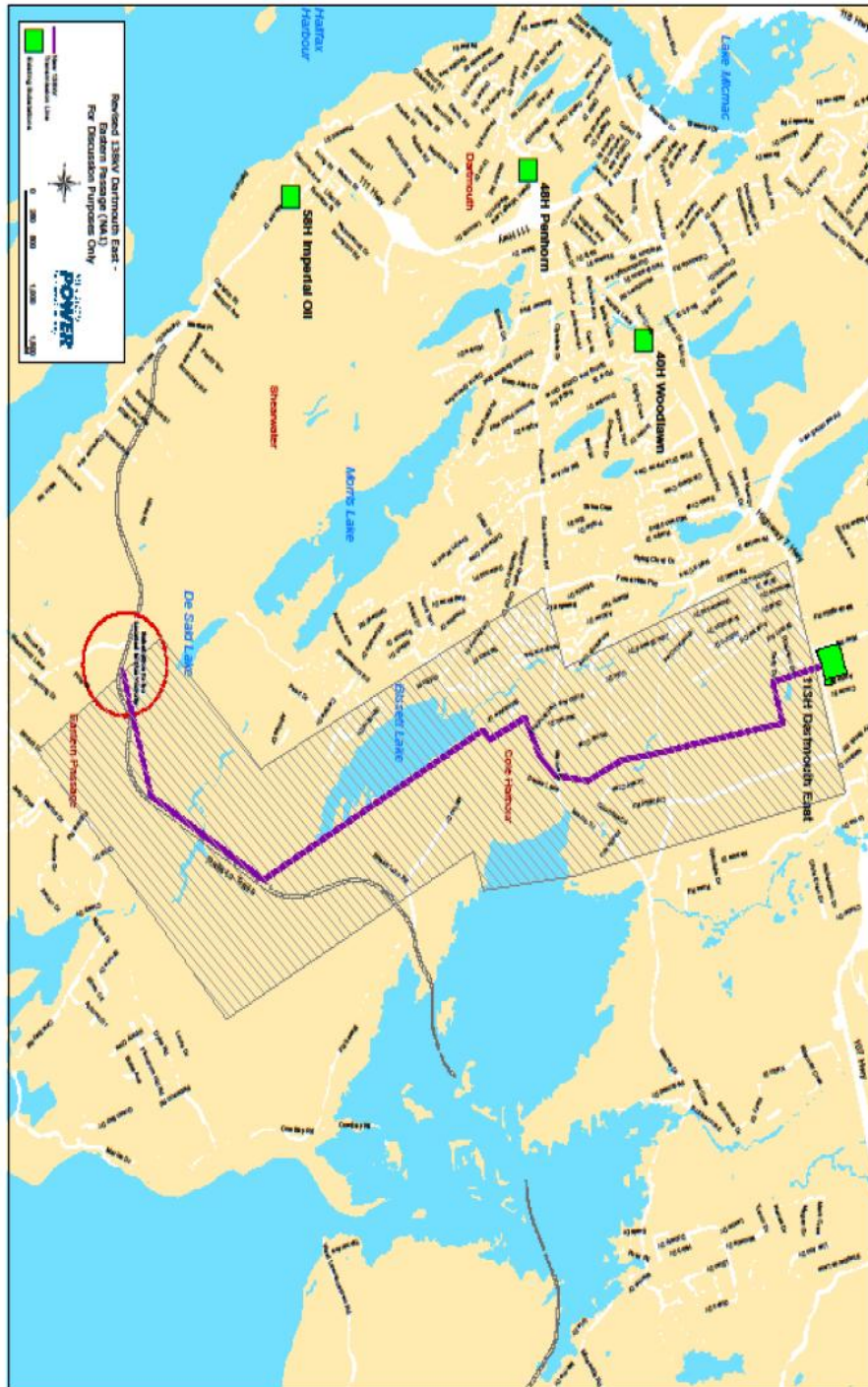


Figure 3.7 – New Line via Salt Marsh Trail

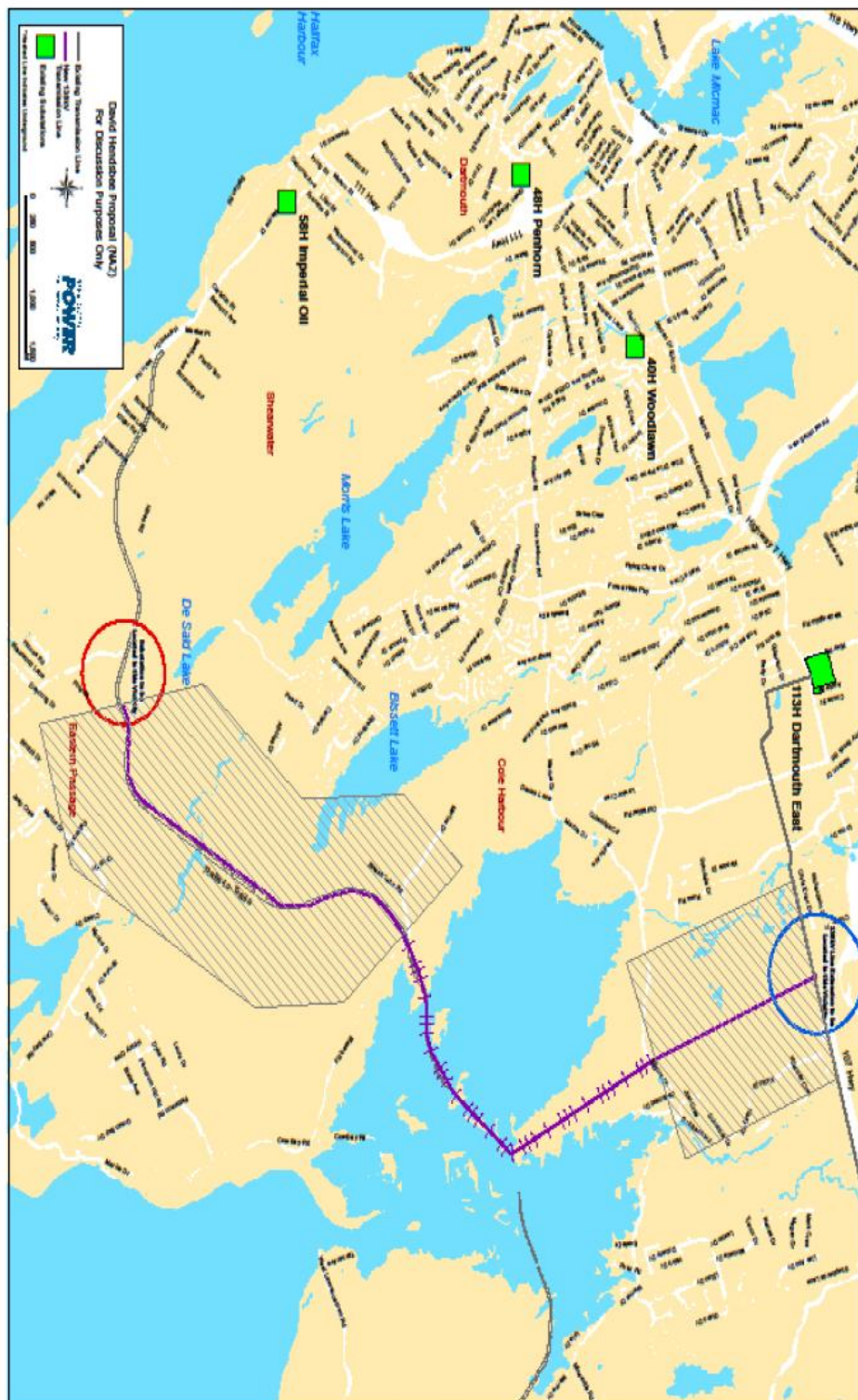


Figure 3.8 – Tufts Cove to Imperial Oil along Harbour

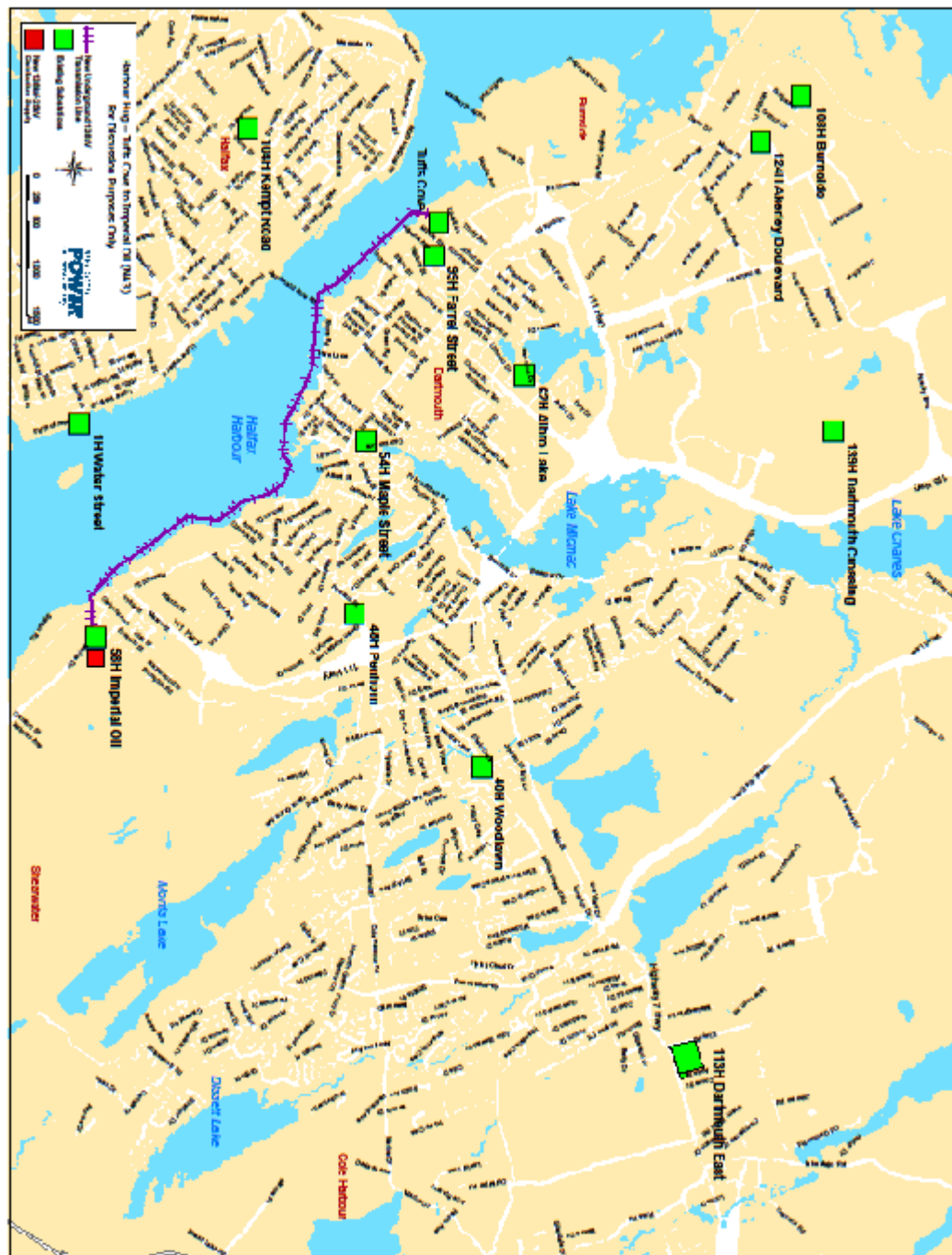
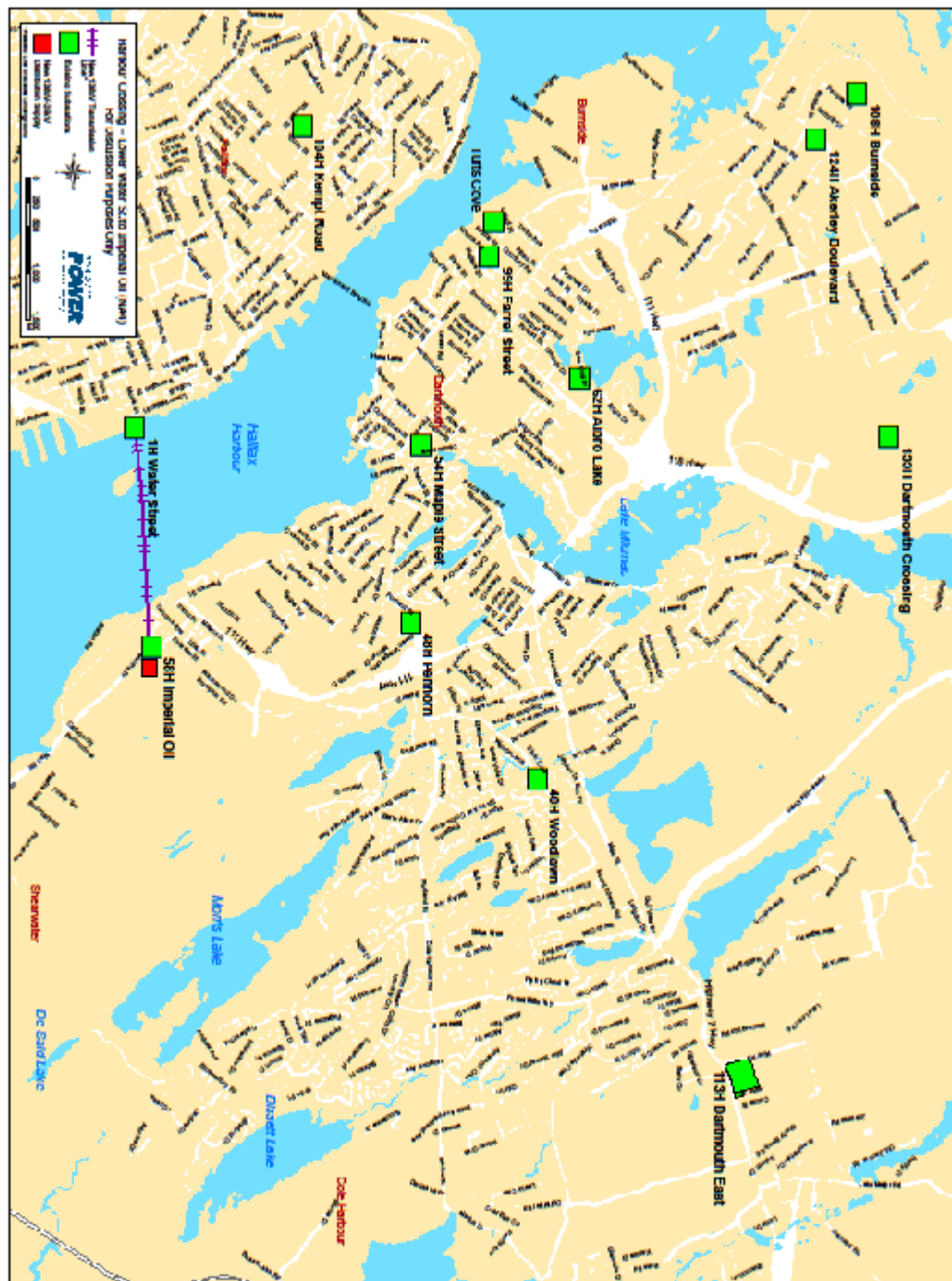
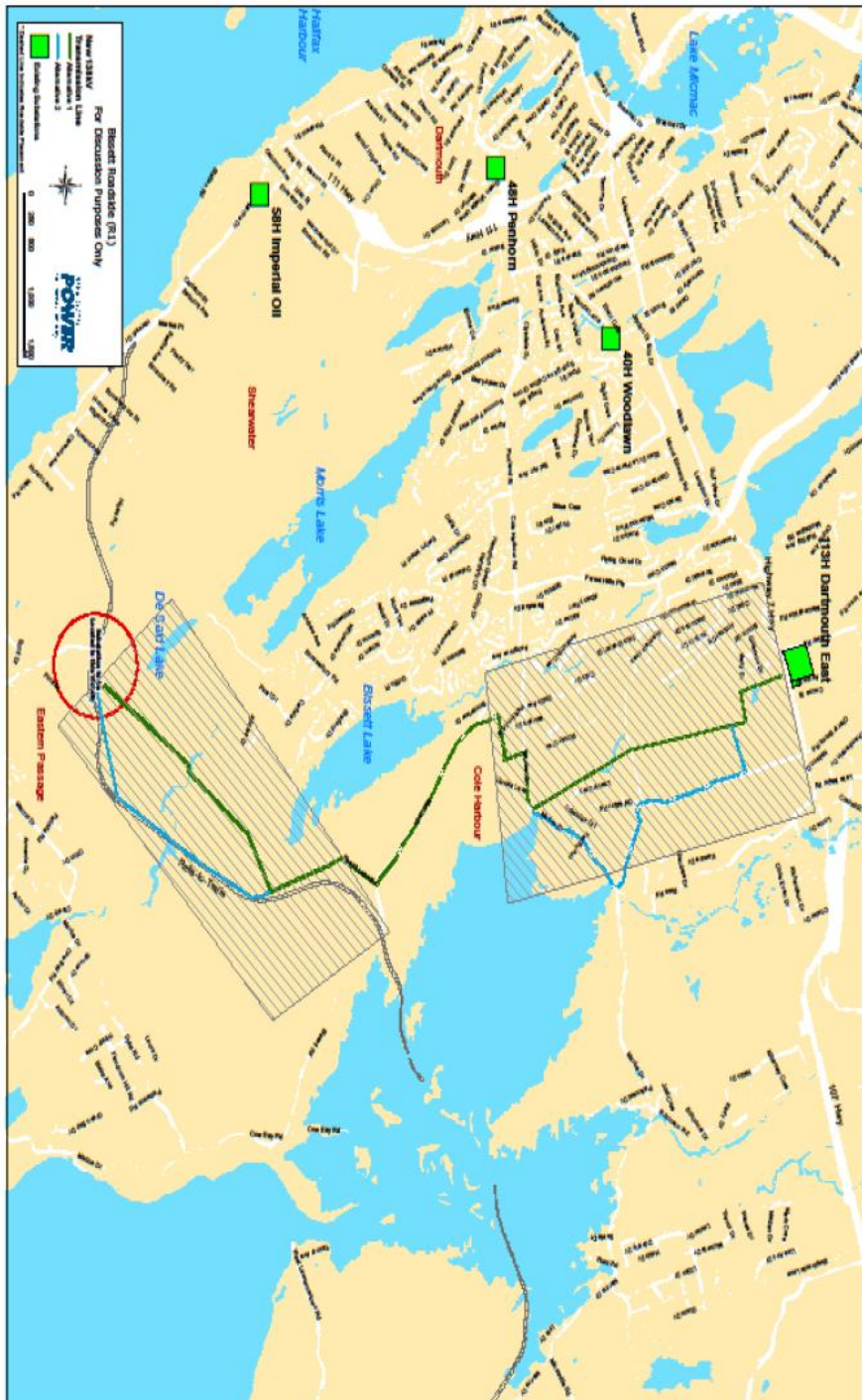


Figure 3.9 – Build Line across Harbour



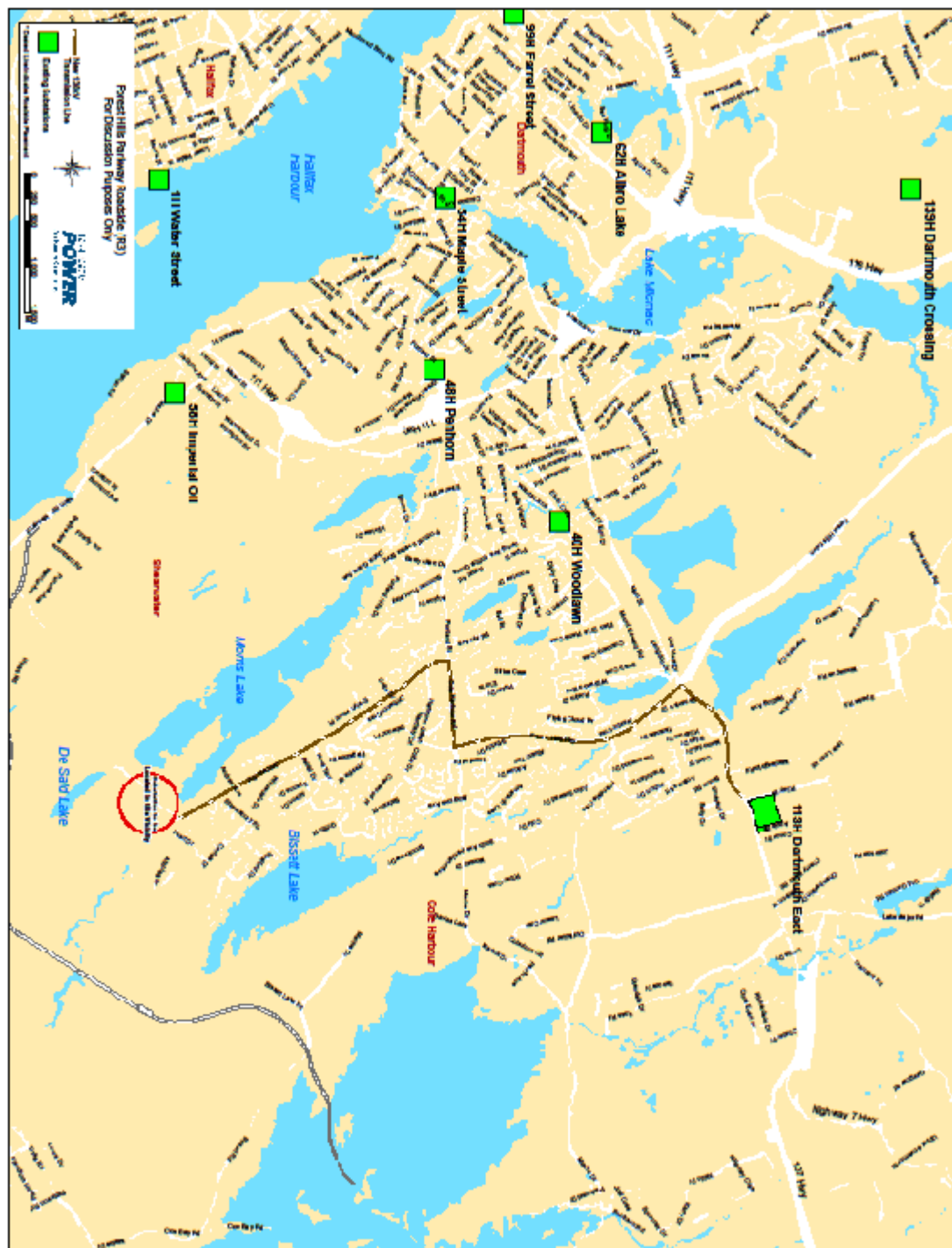
Figures 3.10 - 3.12 Roadside Pathways

Figure 3.10 – Roadside Dartmouth East via Bissett Road to new Substation



[illegible]

Figure 3.12 – Roadside Dartmouth East via Caldwell



Figures 4.1 – 4.3 Themes for Remaining Options

Figure 4.1 - Options along Existing 69 kV Loop

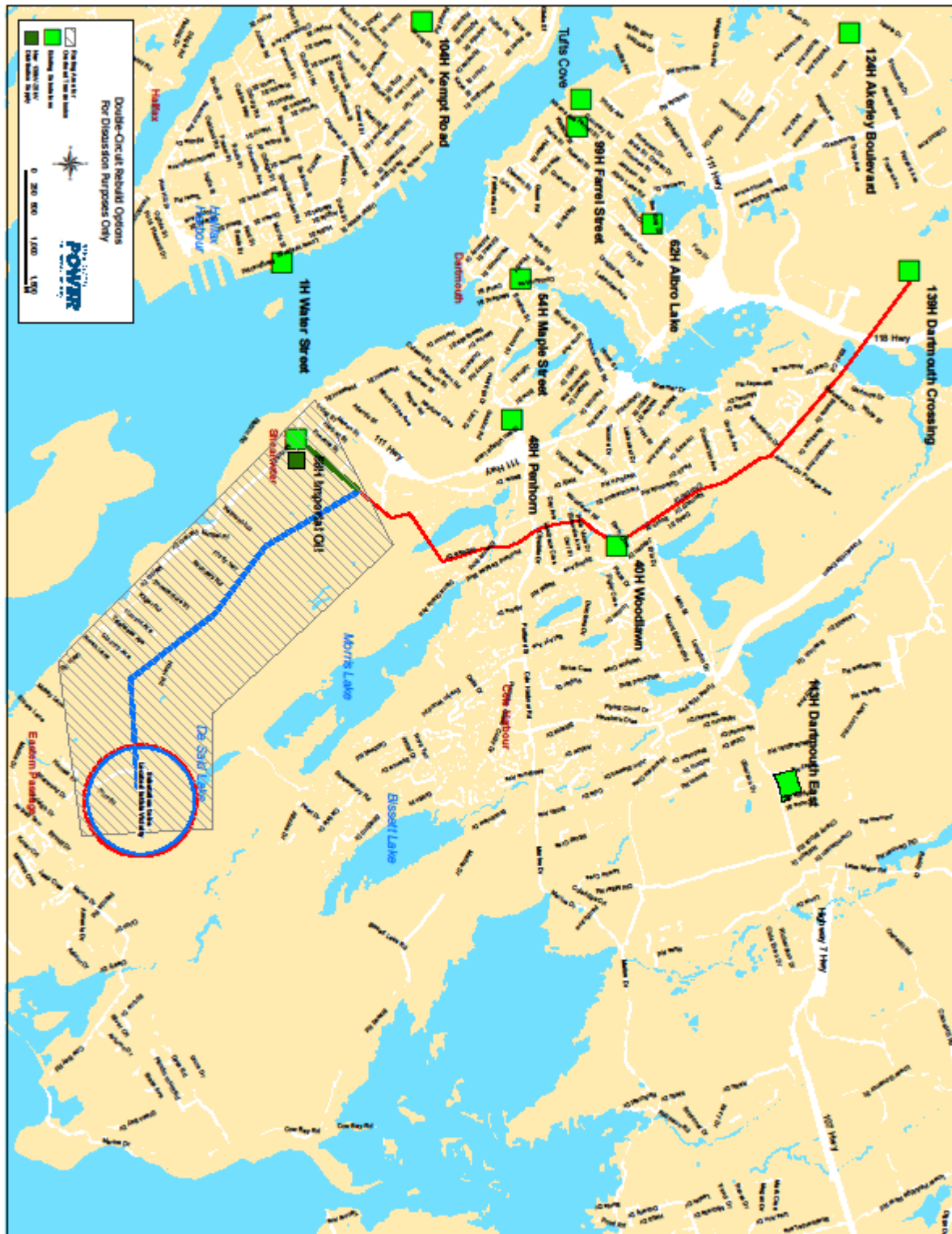


Figure 4.2 - Roadside Options near Baker / DND

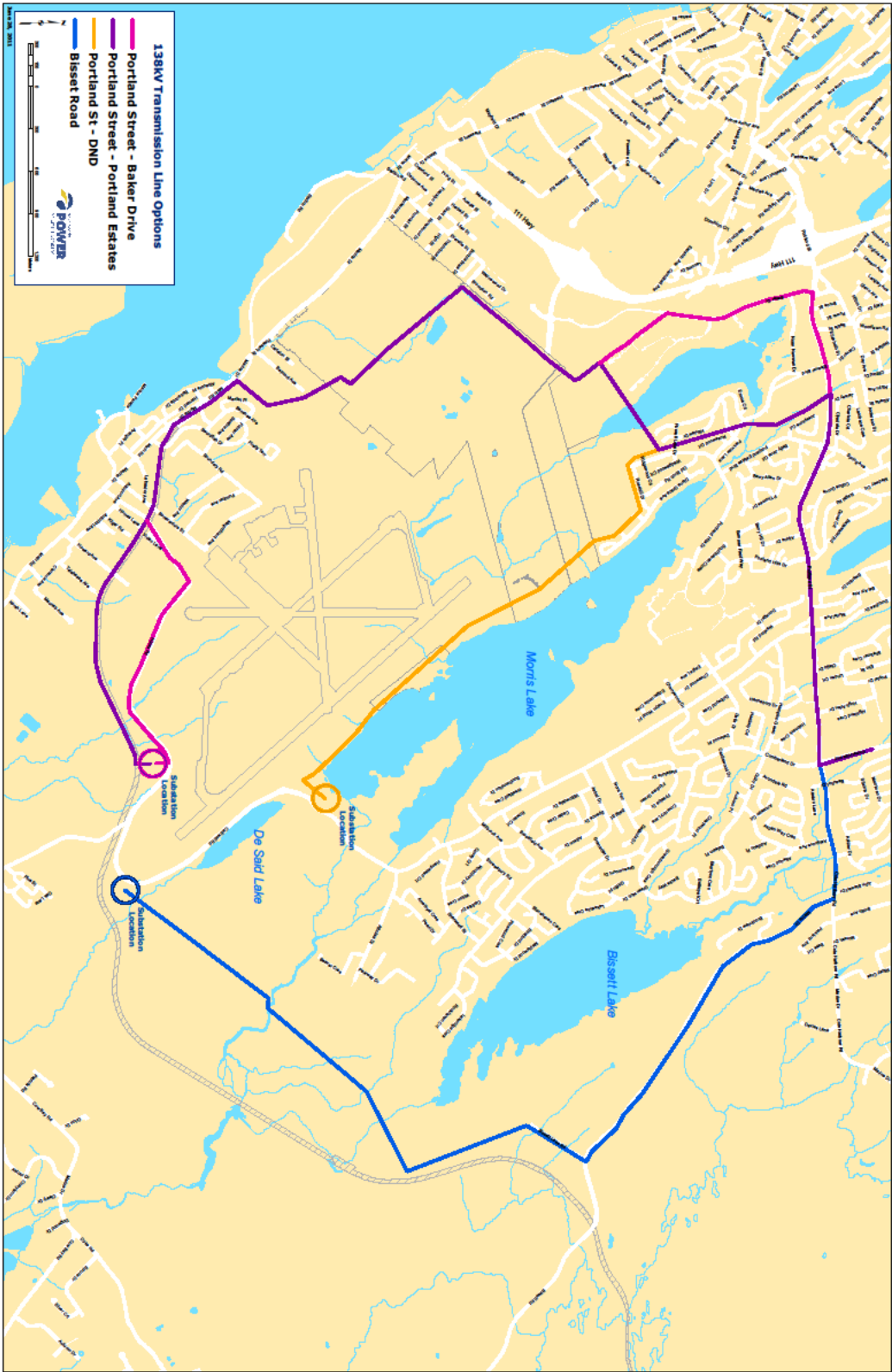


Figure 4.3 - Roadside via Caldwell or Bissett



Figures 5.1 & 5.3 Sightline Portrayals

Figure 5.1 – From High ground looking Across the Salt Marsh

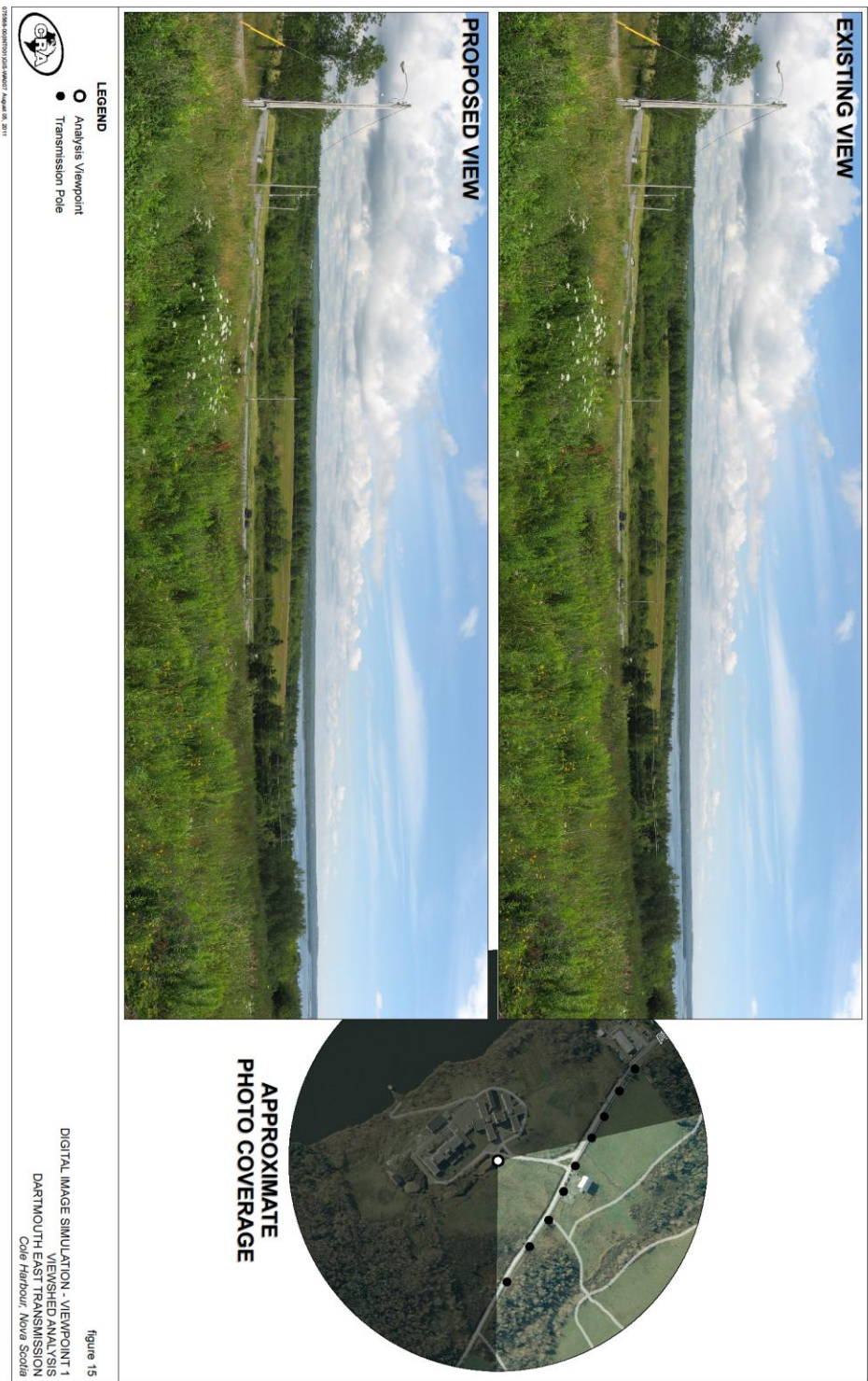


Figure 5.2 – From Marsh looking Inland



Figure 6 – Wetland Information North of the Trail

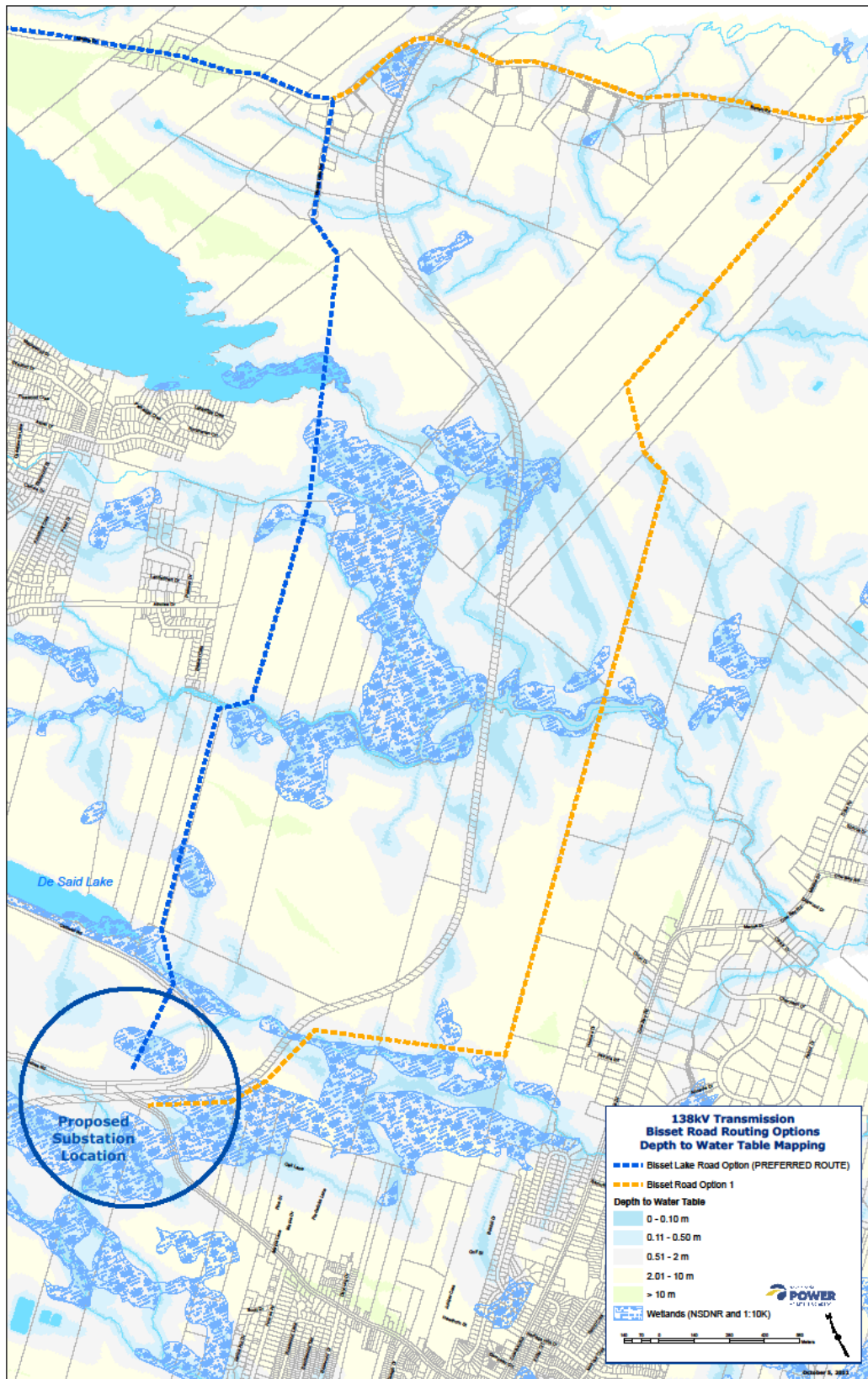


Figure 7 – Two Options Presented at Open Houses



Figure 8 - Final Recommended Routing

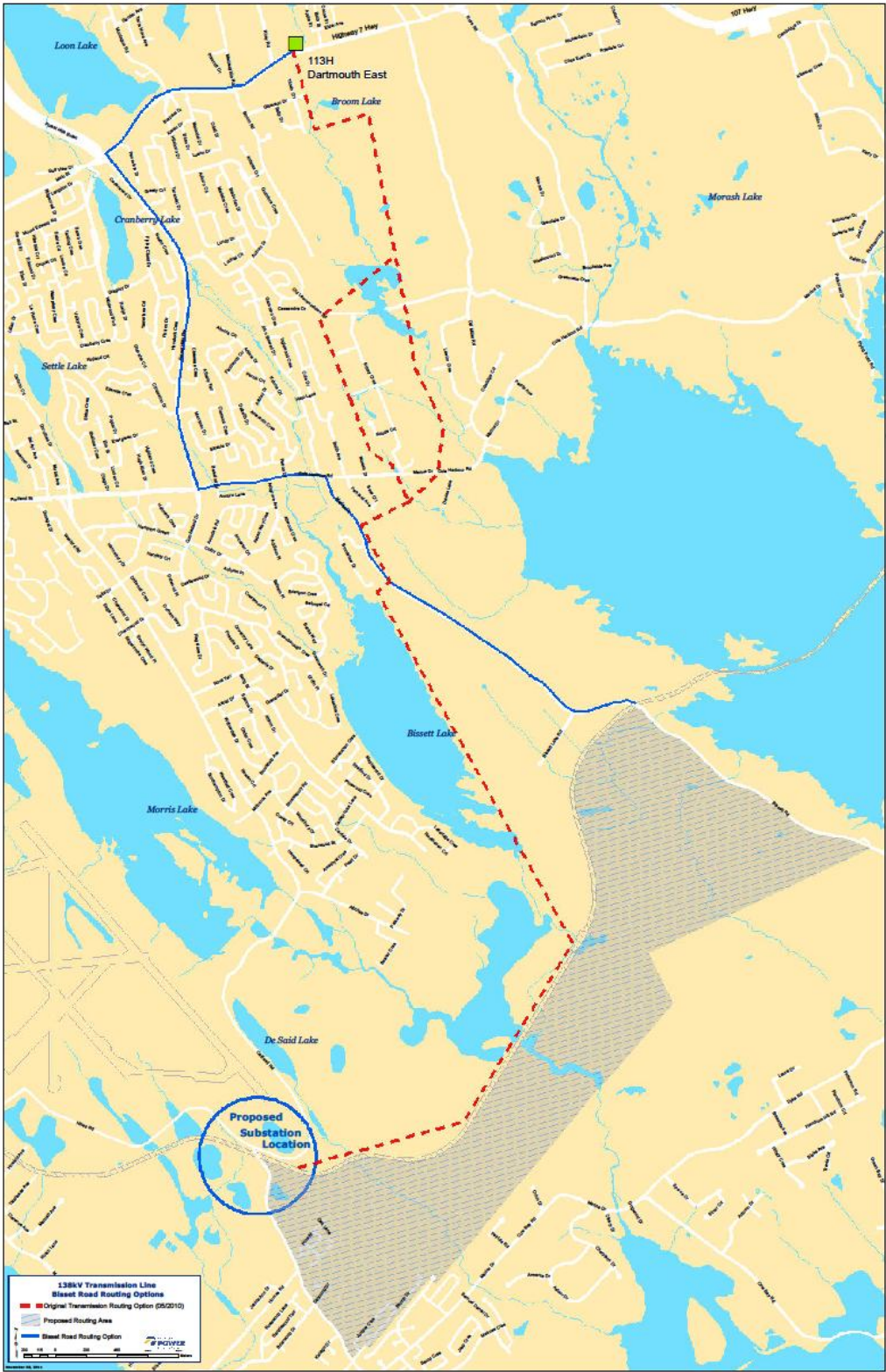


Table 1 – Rating Scheme for Initial Application of Routing Criteria

HARBOUR EAST - PHASE ONE CRITERIA				Blue
Topic / Subtopic	Green	Yellow	Red	
				Exceeds Acceptable Criteria, Option Eliminated
Community Considerations	<i>Low or No Risk or Concern</i>	<i>Some Risk but Normally Can be Mitigated</i>	<i>High Risk and/or Identified Effect</i>	
Change in Proximity to Line	Limited Change	Some Change	Notable Change	
Effect on Community Resources	Minimal	Some effects but fixable	Noted real effects	
Viewplanes	Roadside or no new issue	Minor additional affects	New signif. area affected	
Effects on Aboriginal Rights/Land	None	Some effects re use	Some effects re owned	
Landowner Considerations				
Degree of Potential Effects to Landowners	Modest new effects to <10% landowners	Modest effects to >10% or some higher effects	Modest effects for >25% or several higher effects	
Parkland and Other Special Areas				
Proximity to Parkland & Special Areas	No or minimal proximity	Proximity but mitigable	Unmitigable effects	
Historic and Archaeological Resources	No or few resources here	Limited but mitigable	Noted amt. mitigation difficult	
Environmental				
Wetlands, Lakes, Habitat, River Crossings	No new river crossings, limited wetlands/habitat	Limited crossings, habitat, etc. mitigable	Significant features with difficult mitigation	Unavoidable Significant env. issue
Species At Risk & Terrestrial (Birds, Wildlife)	No SAR or terrestrial issues	Some issues but mitigable	Notable challenges with difficult or no mitigation	Unavoidable Significant env. issue
Technical Feasibility/Reliability				
Ability to feasibly Build Option	Limited tech. obstacles	Notable Obstacles	Onerous Tech. obstacles	Cannot be built
Transmission Planning Requirements	Maximum Flexibility for Planning Period & Beyond	Meets Requirements for Planning Period	Minimally meets requirements of Planning Period	Does not Meet Req.
Degree of Reliability Improvement	High	Medium	Low	None
Total Construction Cost				
Total Cost less than \$10M		\$10M to \$15M	\$15M to \$20M	more than \$20M

HARBOR EAST PHASE 1 CRITERIA ANNOTATION

CATEGORY	CRITERION	ANNOTATION
Community Considerations	Change in Proximity to Line	At this initial Phase, the focus is simply on assessing relative change of resources, houses, etc. from the proposed line routing. More precise detailing may be possible for Phase II analysis.
	Effect on Community Resources	The category below dealing with parcels, etc. represents a particular type of community resource. We are looking to identify any other potential effects such as schools, churches, cemeteries, recreation centers, etc.
	Viewplanes	This is designed to identify new or incremental effects re viewplanes. Use of existing lines and routings presumably minimizes these effects. Building new lines in the direct path of identified vistas creates more significant effects.
	Effects on Aboriginal Rights/Lands	Most if not all routes probably avoid this issue but the three degrees of assessment identify no effects, effects to use of rights and effects to land ownership.
Landowner Considerations	Degree of Potential Effects to Landowners	As a Phase I criterion this looks at effects on lands (e.g. additional guy wires), property bisecting, or other infringement of use of land. This criterion also recognizes the ability to mitigate effects in siting the options.
Parkland/ Special Areas	Proximity to Parkland & Special Areas	Routing can avoid these areas, approach or abut them or be more significantly present within such areas, with or without mitigation potential
	Historic & Archaeological Resources	Avoidance of known areas would be the norm but some options could possibly pass close to or over such areas.
Environmental	Wetlands, Lakes, Habitat, River Crossings	Road side and rebuild options should have little potential to impact such aquatic resources but some routing through new areas can have modest potential to intersect with some of these features.
	Species at Risk and Terrestrial	Similar assessment as per above. Building in new areas creates a higher potential for effects but mitigation is often possible.
Technical Feasibility/Reliability	Ability to Feasibly Build Option	There would be very few instances where an option cannot be feasibly built because of numerous or significant obstacles. However, the 14 options do contain varying degrees of challenge technically and practically. This is a high level comparison only to assist in identifying better options and screening out others
	Transmission Planning Requirements	Some options provide immediate relief for current challenges but offer little assistance to meet longer term requirements.
	Degree of Reliability Improvement	Most options provide some improvement in system reliability but only a limited number provide more comprehensive risk reduction across the system.
Total Construction Cost	Total Cost	These are very introductory cost numbers that simply provide a high level of comparison of the options.

Table 2 – Results of Initial Rating

	Existing Transmission Assets					New Transmission Corridors				Roadside Transmission			Non-Transmission	
	1	2	3	4	5	6	7	8	9	10	11	12	Demand Side Management	New Distributed Generation
Community						+								
Line Proximity Change														
Community Resource Effects														
Viewplanes														
Aboriginal Effects														
Landowner														
Landowner Effects	+									-	-	-		
Parkland/Special Areas														
Proximity to Special Areas														
Historic/Archaeology														
Environmental														
Aquatics														
Terrestrial														
Technical / Reliability														
Feasibility to Build														
Time Planning Required														
Reliability Improvement														
Construction Cost														
Total Cost														

COMPARISON OF INITIAL TRANSMISSION OPTIONS & CRITERIA - HARBOUR EAST

HSPI ITEM No.	QTY	DESCRIPTION
1	1	TREATED POLE - CLASS TYPE & LENGTH AS SPECIFIED
17	2	GRV. MACHINE BOLT 3/4" DIA X 14" C/W NUT
35	2	PALNUT - 3/4"
48	2	GRV. CURVED WASHER 3" X 3" X 1/4" WITH 13/16" DIA. HOLE
43	4	GRV. LAG BOLT - 1/2" DIA X 4"
78	3	POLE BEARING PLATES (SET)
1139	3	CLAMP FOR HORIZONTAL & VERTICAL INSULATORS - ACTS-150
161	2	PALNUT - 7/8"
267	2	GRV. LAG BOLT - 3/4" DIA X 8 1/2"
296	2	GRV. MACHINE BOLT 7/8" DIA X 16" C/W NUT
A	1	VERTICAL INSULATOR ASSEMBLY C/W TRANSMISSION MOUNTING POWER SYSTEM W/PO300-83258
B	2	HORIZONTAL INSULATOR ASSEMBLY C/W TRANSMISSION MOUNTING POWER SYSTEM W/PO300-83259

[illegible]