SUMMARY REPORT

BC Hydro Public Consultation:
Transmission Line Relocation – George Massey Tunnel
November 2 – 20, 2015

Consultation Summary Report

January 2016

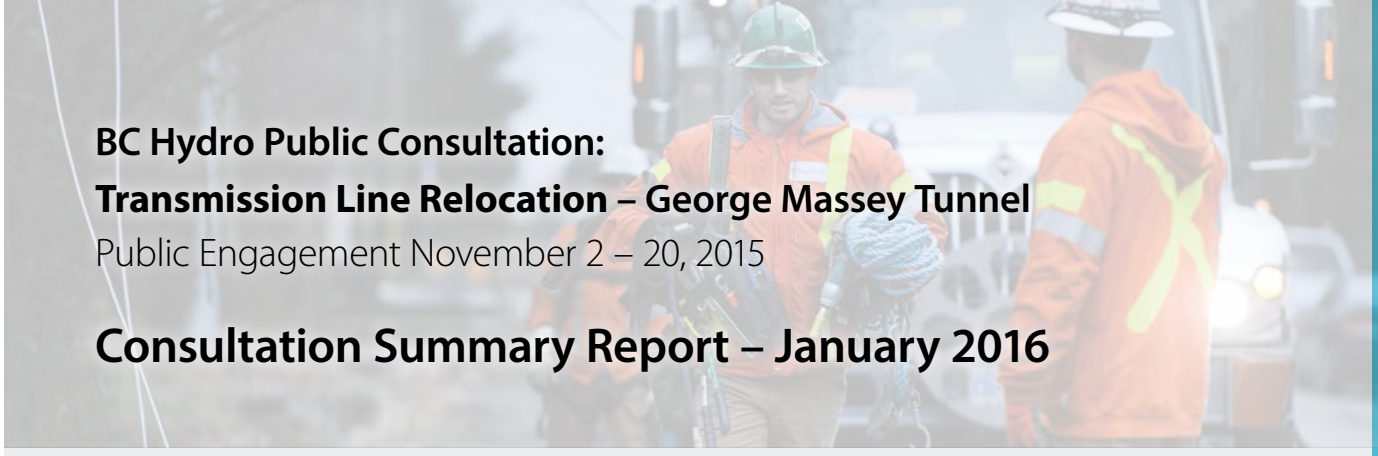
Prepared by
Kirk & Co. Consulting Ltd.

Kirk&Co.

About Kirk & Co. Consulting Ltd.

Kirk & Co. is a recognized industry leader in designing and implementing comprehensive public and stakeholder consultation and engagement programs. Utilizing best practices, Kirk & Co. designs consultation and engagement programs to maximize opportunities for input. Kirk & Co. independently analyzes and reports on public and stakeholder input.

The views represented in this report reflect the priorities and concerns of respondents. They may not be representative of the views of the public and other stakeholders as a whole because respondents self-selected into the public consultation, and therefore do not reflect a random sample.



BC Hydro Public Consultation:
Transmission Line Relocation – George Massey Tunnel
Public Engagement November 2 – 20, 2015

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Executive Summary

A. BACKGROUND

The Province of B.C. announced that the George Massey Tunnel will be replaced with a new bridge. As a result, BC Hydro is looking at three alternatives to relocate their transmission line out of the tunnel to ensure the power supply remains reliable for customers in the surrounding areas.

BC Hydro presented the following three alternatives for relocating the transmission line out of the tunnel:

- **Alternative 1:** an overhead transmission line crossing the Fraser River, which would be aligned beside the new bridge
- **Alternative 2:** an underground transmission line running under the Fraser River through a borehole path created using horizontal directional drilling (HDD)
- **Alternative 3:** a transmission line located on the new bridge

B. PUBLIC CONSULTATION: NOVEMBER 2 – 20, 2015

Public consultation took place from November 2 to 20, 2015 to present information, and gather input, about the three alternatives under consideration to relocate the transmission line out of the tunnel. Information was also presented about relocating sections of the existing overhead transmission lines along Highway 99 in Richmond and Delta. See Section 2.0 for an overview of the public consultation methods.

C. PARTICIPATION

There were 89 participant interactions during the public consultation period, November 2 – 20, 2015.

- **35 people** attended seven **small group meetings**
- **24 people** attended two **open houses**
- **19 feedback forms** were submitted (hard copy and online)
- **Seven submissions** were received though email, mail and phone
- **Four people visited BC Hydro team members** during scheduled drop-in events

D. SUMMARY OF INPUT – FEEDBACK FORMS

Below is a summary of the input from the 19 feedback forms (hard copy and online) received. The full results from the feedback forms, along with the frequently mentioned comments from written submissions and the small group meetings, can be found in Section 3.0 starting on page 7.

- **Participants were almost evenly split between agreement and disagreement for each alternative when asked to rate their level of agreement with the three alternatives under consideration to relocate the existing transmission line out of the tunnel.**
- **When asked to provide reasons for agreement or disagreement, frequently mentioned comments included the following:**

Overhead transmission line

- Agree as it is most practical in terms of safety, reliability and cost
- Disagree due to visual impacts

Underground transmission line

- Agree as the attributes are clear, including reliability in extreme weather conditions, and minimizing visual impacts and potential health consequences associated with electric and magnetic fields (EMF)
- Disagree as construction and maintenance costs make it less desirable than an overhead transmission line

Transmission line located on the bridge

- Agree as it combines an acceptable level of safety, reliability and environmental impact, while being significantly more aesthetically pleasing than the overhead transmission line
- Disagree for a variety of reasons including dependence on bridge design and concerns related to reliability

1. Introduction

1.1. KEEPING THE LIGHTS ON: A CRITICAL PART OF BC HYDRO'S TRANSMISSION SYSTEM

In September 2013, the Province of B.C. announced that the George Massey Tunnel will be replaced with a new bridge. As one of BC Hydro's transmission lines runs through the tunnel, it will need to be relocated. BC Hydro is looking at three alternatives to relocate this transmission line out of the tunnel to ensure the power supply remains reliable for customers in the surrounding areas.

This transmission line is a critical part of BC Hydro's network, supplying power to Richmond, Delta and other parts of the Lower Mainland. Some sections of the existing overhead transmission line, those running adjacent to Highway 99 on either side of the tunnel, will also need to be moved before bridge construction and highway modifications begin. This can be done mostly within existing provincial highway and BC Hydro rights-of-way.

More information about this transmission line relocation can be found at ***bchydro.com/gmtt***.

2. Public Consultation: November 2 – 20, 2015

2.1 PURPOSE

Public consultation took place from November 2 to 20, 2015 to present information, and gather input, about the three alternatives under consideration to relocate the transmission line out of the tunnel. Information was also presented about relocating sections of the existing overhead transmission lines along Highway 99 in Richmond and Delta.

During consultation, BC Hydro met with residents, businesses, stakeholders and the public in small group meetings and open houses to discuss relocating the transmission line out of the tunnel. BC Hydro representatives presented the following three alternatives for relocating the transmission line out of the tunnel:

- **Alternative 1:** an overhead transmission line crossing the Fraser River, which would be aligned beside the new bridge
- **Alternative 2:** an underground transmission line running under the Fraser River through a borehole path created using horizontal directional drilling (HDD)
- **Alternative 3:** a transmission line located on the new bridge

Based on work to date, BC Hydro stated that Alternative 1, the overhead alternative, appears to be a technically leading alternative for a number of reasons, including a high level of safety and reliability of service.

A copy of the Discussion Guide and Feedback Form can be found in Appendix A.

2.2 HOW INPUT WILL BE USED

Public and stakeholder input received during this consultation, along with input from other stakeholders and study results, is being considered by BC Hydro as they work to determine a preferred alternative in early 2016. Input from First Nations is being gathered in a parallel process by BC Hydro and will also be considered as BC Hydro determines a preferred alternative.

2.3 PARTICIPATION

Participants provided feedback on the three alternatives by attending the consultation meetings, reading the Discussion Guide and completing the feedback form (online or in hard copy), visiting BC Hydro representatives at the Ministry of Transportation and Infrastructure's George Massey Tunnel Project Office, or contacting BC Hydro by email, mail or phone. A summary of the input received during the public consultation period can be found starting on page 7.

There were 89 participant interactions during the public consultation period, November 2 – 20, 2015.

- **35 people** attended seven **small group meetings**
- **24 people** attended two **open houses**
- **19 feedback forms** were submitted (hard copy and online)
- **Seven submissions** were received though email, mail and phone
- **Four people visited BC Hydro team members** during scheduled drop-in events

2.4 NOTIFICATION

The primary form of notification for public consultation was through the delivery of a postcard to local residents and businesses near the George Massey Tunnel.

Public Notification Postcard: During the week of October 19, 2015, a postcard was mailed to about **6,100 businesess and households** in Delta and Richmond around the George Massey Tunnel. This postcard informed recipients of ways to participate in the public consultation period..

The copy of the notification postcard can be found in Appendix B.

The following notification methods were also utilized to inform the public and stakeholders of the public consultation period:

Newspaper Advertising: Advertisements ran in the following community newspapers between October 28 and November 4, 2015.

PUBLICATIONS	DATES
Delta Optimist	Wednesday, October 28
Richmond News	
Richmond News	Wednesday, November 4

Online Advertising: Online notification advertisements ran from October 30 to November 5, 2015, on the following site, with the following results:

- Richmond News: 2,023 impressions

A copy of the advertisements that ran in the community newspapers and online can be found in Appendix C.

Notification Emails: Two emails were sent to 136 stakeholders (residents, businesses, local governments, local marine users, Members of the Legislative Assembly and other stakeholders) on October 21, 2015 and November 2, 2015, with information about the public consultation.

Phone Calls: Phone calls were made to the stakeholder list to inform them of the public consultation, as follow-up to the email notification.

Website: A dedicated web page was created at ***bchydro.com/gmtt*** in July 2015 to align with the initial public notification of the Transmission Line Relocation – George Massey Tunnel. This web page was updated prior to the consultation with information about the consultation, including small group and open house meeting locations and times, a copy of the Discussion Guide and a link to the online Feedback Form (available from November 2 to 20, 2015).

2.5 METHODS

Materials, including the Discussion Guide and Feedback Form, were made available online at ***bchydro.com/gmtt*** from November 2 to 20, 2015. Feedback was collected through the following methods:

Small Group Meetings

35 people attended seven small group meetings in Delta and Richmond during the consultation period. Key themes from these meetings are summarized in Section 3.2, starting on page 14.

BC Hydro team members attended the small group meetings along with a facilitator and meeting recorder. At each meeting, participants were provided with a copy of the Discussion Guide and Feedback Form. BC Hydro team members presented information about the transmission line relocation, focusing on the three alternatives under consideration for relocating the transmission line out of the tunnel. Participants were encouraged to ask questions and provide feedback during the meetings.

Small group meetings were held on the following dates:

DATE	TIME	LOCATION
November 3, 2015	10:00 a.m. to 12:00 noon	**DELTA** Delta Town & Country Inn
	1:00 p.m. to 3:00 p.m.	
November 4, 2015	10:00 a.m. to 12:00 noon	
November 4, 2015	2:00 p.m. to 4:00 p.m.	**RICHMOND** Richmond Country Club
November 5, 2015	10:00 a.m. to 12:00 noon	**RICHMOND** Holiday Inn Express & Suites Riverport
	1:00 p.m. to 3:00 p.m.	
November 16, 2015	6:00 p.m. to 8:00 p.m.	

Public Open Houses

24 people attended two open houses in Delta and Richmond during the consultation period.

Display boards summarizing the consultation materials were set up around the room, and participants had the opportunity to engage with BC Hydro team members one-on-one and in small group discussions. The Discussion Guide and Feedback Form was also provided, and participants were encouraged to complete a feedback form in hard copy or online.

A copy of the open house display boards can be found in Appendix D.

Public open houses were held on the following dates:

DATE	TIME	LOCATION
November 3, 2015	5:00 p.m. to 8:00 p.m.	**DELTA** Delta Town & Country Inn
November 5, 2015	5:00 p.m. to 8:00 p.m.	**RICHMOND** Richmond Country Club

Discussion Guide and Feedback Form

19 feedback forms were received (hardcopy and online) during the consultation period.
A Discussion Guide was developed that contained information about moving the overhead transmission line along Highway 99 and outlined the three alternatives BC Hydro is considering for relocating the transmission line out of the tunnel.

The Discussion Guide and Feedback Form, along with a link to the online version of the feedback form, was available at ***bchydro.com/gmtt*** during the public consultation period.

A copy of the Discussion Guide and Feedback Form can be found in Appendix A.

Submissions by Email, Mail and Phone

Seven submissions were received though email, mail and phone.

Visit Us

Four people visited BC Hydro team members during schedule drop-in events during the consultation period. Members of the BC Hydro team were also available at the Ministry of Transportation and Infrastructure's George Massey Tunnel Replacement Project Office during the following times.

DATE	TIME	LOCATION
November 13, 16 and 17	1:00 p.m. to 4:30 p.m.	**GEORGE MASSEY TUNNEL REPLACEMENT PROJECT OFFICE** Ironwood Plaza 2030 – 11662 Steveston Hwy., Richmond

3. RESULTS

The following provides a summary of input received from online feedback forms, email, mail and phone submissions and the small group meetings during the public consultation period from November 2 to November 20, 2015. As much as possible, the language expressed by respondents has been retained.

Public and stakeholder input received during this consultation, along with input from other stakeholders and study results, is being considered by BC Hydro as they work to determine a preferred alternative in early 2016. Input from First Nations is being gathered in a parallel process by BC Hydro and will also be considered as BC Hydro determines a preferred alternative.

BC Hydro will produce a consideration memo, summarizing how feedback was considered and responded to, which will be posted online at ***bchydro.com/gmtt***.

3.1 FEEDBACK FORM

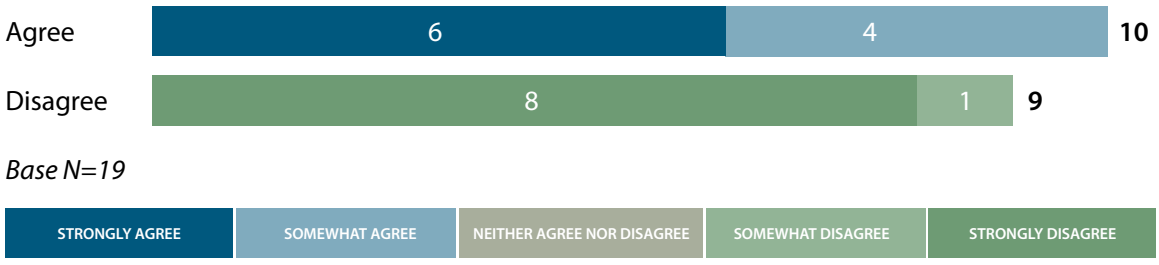
Below are the questions contained in the feedback form and a summary of responses received.

The summary of comments received through the feedback form is categorized according to frequency. This summary reflects the comments most frequently mentioned by respondents.

Note: The number of comments may exceed the total commenting, as respondents may have commented on more than one topic.

ALTERNATIVE 1: OVERHEAD TRANSMISSION LINE

1. A) Please tell us your level of agreement with an overhead transmission line crossing the Fraser River, which would be aligned beside the new bridge:



ALTERNATIVE 1: OVERHEAD TRANSMISSION LINE

1. B) Use the space below to provide any comments you would like to share about the reasons for your agreement or disagreement with Alternative 1.

Of the 15 participants who provided additional comments, the following were the most frequently mentioned comments:

AGREEMENT WITH AN OVERHEAD TRANSMISSION LINE

- **An overhead transmission line is the most practical alternative in terms of safety, reliability and cost** (8 mentions)

DISAGREEMENT WITH AN OVERHEAD TRANSMISSION LINE

- **Concerns regarding the visual impacts of an overhead transmission line** (6 mentions)
- **Concerns regarding the environmental impacts of an overhead transmission line, including potential impacts to birds** (3 mentions)
- **Concerns regarding the safety of an overhead transmission line, including electric and magnetic fields (EMF) around overhead transmission lines** (3 mentions)

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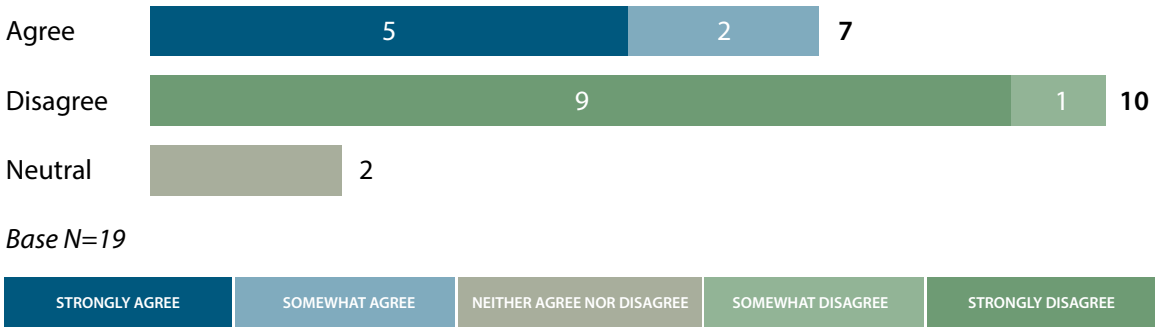
1. C) Please provide any additional comments on Alternative 1.

- BC Hydro should look at the feasibility of attaching the transmission line to the towers of the bridge; this would remove the need for the lattice towers (2 mentions)
- Support the overhead transmission line, as it is the least costly option (1 mention)
- Disagree with both the overhead and the on the bridge transmission line alternatives, when the transmission line could go under the Fraser River (1 mention)
- In the risk analysis for selecting an alternative, consideration should be given to terrorist threats and EMF (1 mention)

FEEDBACK FORM RESULTS

ALTERNATIVE 2: UNDERGROUND TRANSMISSION LINE

2. A) Please tell us your level of agreement with an underground transmission line running under the Fraser River:



2. B) Use the space below to provide any comments you would like to share about the reasons for your agreement or disagreement with Alternative 2.

Of the 13 participants who provided additional comments, the following were the most frequently mentioned comments:

AGREEMENT WITH AN UNDERGROUND TRANSMISSION LINE

- Attributes of the underground transmission line are clear, including reliability in extreme weather conditions, and minimizing visual impacts and potential health consequences associated with exposure to EMF (4 mentions)

DISAGREEMENT WITH AN UNDERGROUND TRANSMISSION LINE

- Construction and maintenance make an underground transmission line less desirable than an overhead transmission line (4 mentions)
- The least viable option, due to safety, service, reliability, seismic, and environmental considerations (3 mentions)

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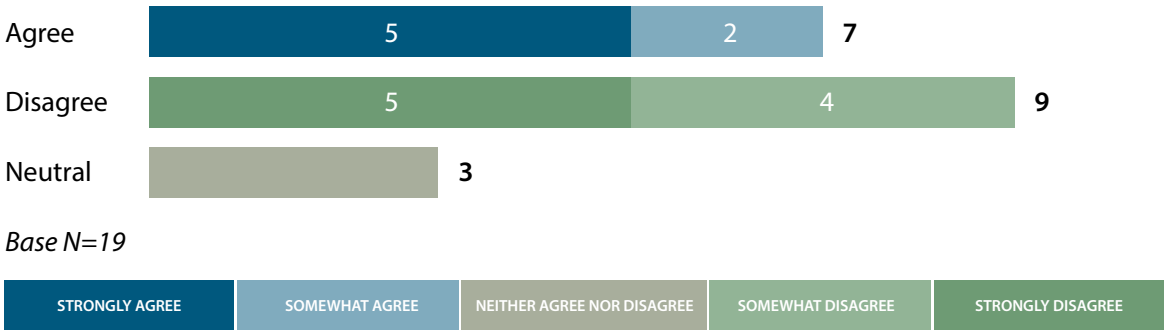
2. C) Please provide any additional comments regarding Alternative 2.

- Underground transmission line is the best option available (3 mentions)
- HDD would provide the stability for the underground alternative, and the probability of failure of an underground line would be extremely low (2 mentions)

ALTERNATIVE 3: TRANSMISSION LINE ON THE BRIDGE

3. A) Please tell us your level of agreement with a transmission line located on the new bridge.



3. B) Use the space below to provide any comments you would like to share about the reasons for your agreement or disagreement with Alternative 3.

Of the 12 participants who provided additional comments, the following were the most frequently mentioned comments:

AGREEMENT WITH A TRANSMISSION LINE LOCATED ON THE NEW BRIDGE

- **Best option based on the information provided, as it combines an acceptable level of safety, reliability and environmental impact while being significantly more aesthetically pleasing than the overhead transmission line** (5 mentions)

DISAGREEMENT WITH A TRANSMISSION LINE LOCATED ON THE NEW BRIDGE

Comments included:

- **Too dependent on bridge design and construction** (2 mentions)
- This is still an overhead cable (1 mention)
- Need to avoid exposing the bridge travellers and adjacent neighbourhoods to the negative health consequences of EMF (1 mention)
- Less worker safety during construction and maintenance, less reliable and more costly (1 mention)

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3. C) Please provide any additional comments regarding Alternative 3.

- Would have been first choice if it wasn't for the dependence on external factors (finalization of bridge design, maintenance in confined space) (1 mention)
- BC Hydro should always separate a transmission line from transportation infrastructure (1 mention)
- Underground transmission line is the correct choice (1 mention)
- BC Hydro needs to select a safe and viable option (1 mention)

ADDITIONAL COMMENTS

A total of six participants provided additional comments regarding any aspect of the Transmission Line Relocation – George Massey Tunnel. Following are the collected comments:

- Underground transmission is the preferred approach (2 mentions)
- Very good discussion, thank you for the opportunity to meet with the George Massey Tunnel Transmission group (2 mentions)
- BC Hydro needs to evaluate the continued use of the existing transmission line through the existing George Massey Tunnel (1 mention)
- Interest in whether a consultation summary report would be made public (1 mention)

3.2 KEY THEMES – EMAIL, MAIL AND PHONE

A total of seven participants provided additional comments by email, mail and phone regarding the Transmission Line Relocation – George Massey Tunnel. Following are the collected comments.

Note: The number of comments may exceed the total commenting, as respondents may have commented on more than one topic.

SUBMISSIONS BY EMAIL, MAIL AND PHONE REGARDING ANY ASPECT OF THE TRANSMISSION LINE RELOCATION – GEORGE MASSEY TUNNEL

- A transmission line located on the bridge is the best alternative, please give this option further consideration (5 mentions)
- Overhead transmission line is the preferred alternative (2 mentions)
- Underground transmission is the preferred approach (2 mentions)
- Concern with the visual impacts associated with an overhead transmission line (2 mentions)
- BC Hydro needs to listen to public feedback and incorporate it into their decision prior to proceeding with an alternative (2 mentions)
- Concern that transmission lines will encroach on private property (1 mention)
- Concern regarding the safety of an overhead or on-the-bridge transmission line (1 mention)

3.3 KEY THEMES – SMALL GROUP MEETINGS

Seven small group meetings were held in Delta and Richmond during the consultation period. The small group meetings were open to the public and advertised as part of the notification outlined in Section 2.4.

Meeting attendees included residents from Delta and Richmond and representatives from local and regional government, community groups and industry. Representatives of BC Hydro attended the meetings, along with a facilitator and meeting recorder. Participants were provided with the Discussion Guide and Feedback Form.

Representatives of BC Hydro provided information about the three alternatives, the relocation of transmission poles running adjacent to Highway 99 on either side of the tunnel, and background information on the technical work to date. Participants were invited to ask questions and provide feedback during the meeting.

KEY THEMES

The following are the key themes from the small group meetings held. As much as possible, the language used by participants has been retained.

MEETING TYPE	KEY THEMES
Small Group Meeting 1 Delta November 3, 2015 10:00 a.m. to 12:00 noon 10 Participants	• Some participants expressed concern that the relocation of the transmission line would result in greater visual impacts, particularly with Alternative 1, the overhead transmission line, and asked why the existing transmission line could not remain in the tunnel. • Some participants were concerned that Alternative 1, the overhead transmission line, would increase EMF and health risks for the public. • A representative from the Corporation of Delta expressed that safety and reliability should be key considerations when evaluating the alternatives.
Small Group Meeting 2 Delta November 3, 2015 1:00 p.m. to 3:00 p.m. 5 Participants	• Some participants were concerned about the visual impacts of all three alternatives, particularly Alternative 1, the overhead transmission line. • Some participants asked about the integration between BC Hydro and the Ministry of Transportation and Infrastructure, particularly in relation to the design of Alternative 3, a transmission line located on the new bridge. The participants wanted to ensure that this alternative was fully considered.
Small Group Meeting 3 Delta November 4, 2015 10:00 a.m. to 12:00 noon 7 Participants	• Some participants expressed concern that the construction associated with the transmission line relocation and the new bridge would create further traffic congestion that would make travel to and from Vancouver more difficult. • Some participants expressed that BC Hydro was not giving enough consideration to Alternative 2, the underground transmission line, and Alternative 3, a transmission line located on the new bridge. • Some participants expressed concerns about the possibility of EMF impacts with the line moving closer to a residential development.
Small Group Meeting 4 Richmond November 4, 2015 2:00 p.m. to 4:00 p.m. 5 Participants	• Some participants asked which alternative would be the most cost-effective to construct and suggested that cost was the most important consideration in making Alternative 1, the overhead transmission line, the technically leading alternative. • Some participants noted that the construction schedule for Alternative 1, the overhead transmission line, was much shorter and less risky than construction of the other two alternatives. • Some participants stated that they understood and agreed that Alternative 1, the overhead transmission line, made the most sense as it would take less time to build, create less disruption, would be safer for workers and would be more reliable.

MEETING TYPE	KEY THEMES
Small Group Meeting 5 Richmond November 5, 2015 10:00 a.m. to 12:00 noon 4 Participants	• Some participants noted they were glad to hear that the transmission poles would be replaced with poles of similar appearance (monopoles) north and south of the Fraser River crossing. • The City of Richmond staff in attendance asked if BC Hydro had considered relocating the transmission line to the east side of Highway 99, and on the new bridge. • Some participants asked that BC Hydro look more closely at a trenching technique instead of HDD for Alternative 2, the underground transmission line, as a potentially more cost-effective option.
Small Group Meeting 6 Richmond November 5, 2015 1:00 p.m. to 3:00 p.m. 3 Participants	• Some participants expressed interest in ensuring that there wouldn't be navigation restrictions caused by the height of the conductor or other aspects of Alternative 1, the overhead transmission line. • Some participants stated that the underground alternative was not preferred as it would potentially limit additional dredging of the Fraser River for navigation purposes. They noted that Port Metro Vancouver should be contacted to discuss this and other potential navigation issues. • Participants agreed that Alternative 1, the overhead transmission line, was the preferred alternative.
Small Group Meeting 7 Richmond November 16, 2015 6:00 p.m. to 8:00 p.m. 1 Participant	• The participant noted a preference for the underground transmission line or the transmission line on the bridge, as these alternatives would have fewer visual impacts than an overhead transmission line. • The participant asked about the difference between the conductor used for overhead transmission lines and the cable used for the underground or on the bridge alternatives, including the difference in length of service life. • The participant asked if the underground transmission line alternative would be similar to the transmission line that is in the tunnel now, and about the history of outages on the current line. • The participant expressed concern about traffic related to the construction of the bridge and the transmission line relocation.

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