Construction Safety Management Plan

Site C Clean Energy Project

Revision 2: March 22, 2017

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Revision History

Version	Date	Comments
Draft	10-17-2014	Draft
Rev 0	05-19-2015	Final Plan
Rev 1	06-05-2015	Final Plan, Revision 1 *[Rev 1 date in Revision History corrected from Jun 4 to Jun 5 to match report date]*
Rev 2	03-22-2017	• Updated format showing the monitored intersections and schedule (Section 5.4.12 Traffic Monitoring) • Removal of the temporary MoTI count station which does not collect annual data and is not located near any of the monitored intersections (Section 5.4.12 Traffic Monitoring) • Updates that anticipate that there will not be any Project-imposed restrictions for accessing the south bank dam site gate (Appendix C, Section 2.4, Shuttle Services Based On Restrictions) • Clarification of contractor's monitoring demand for a shuttle (Appendix C, Section 2.4, Shuttle Service Based on Demand) • Clarification of timing and resources for the "Personal Carpool Resources for Commuters Program" (Appendix C, Section 2.1 Personal Carpool Resources for Commuters)

Glossary

CSMP	• Construction Safety Management Plan
CSSMP	• Contractor Site Safety Management Plan
Construction	Any activity associated with building the Site C project, including but not limited to: • clearing • site preparation • quarrying • excavation • material handling and processing • material placement • concrete works • road and bridge building • site reclamation
Environmental Requirements	• The conditions included in the Environmental Assessment Certificate for the Project • The conditions included in the decision statement issued by the Minister of Environment of Canada under Section 54 of the *Canadian Environmental Assessment Act*, 2012 (CEAA 2012) • The permits, authorizations and approvals for the Project issued by regulatory agencies • Statutory requirements
Members of the Public	• Members of the public include all those persons who are not workers under the Worker's Compensation Act or the WorkSafeBC OHS Regulation and who are not authorized visitors to the site.
Prime Contractor	• The directing contractor, employer or other person who enters into a written agreement with BC Hydro to be the prime contractor for the purposes of Section 118 of the *Worker's Compensation Act*

Project Activity Zone	• Area within which the Project components will be found or will occur, but not including existing transportation infrastructure that will be used without modification to transport materials or personnel required for the Project
Qualified Professional (QP)	• A professional who, through demonstrated suitable education, experience, accreditation and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within his or her area of expertise.
Safety Specifications	• The specifications set out in Section 5 of this CSMP
The Project	• Site C Clean Energy Project

1.0 Introduction

1.1 BC Hydro

BC Hydro is a Crown corporation owned by the Province of British Columbia. BC Hydro's mandate is to generate, manufacture, conserve, purchase, and sell electricity to meet the needs of its customers. BC Hydro serves 95 per cent of B.C.'s population, delivering electricity safely and reliably to approximately 1.9 million customers.

As the largest electric utility in British Columbia, BC Hydro operates an integrated system with 31 hydroelectric facilities and three thermal generating plants, totalling approximately 12,000 MW of installed generating capacity. The hydroelectric facilities provide over 95 per cent of the total electricity generated and are located in the Peace, Columbia, and Coastal regions of B.C.

BC Hydro owns and operates two hydroelectric generation facilities on the Peace River that together account for greater than 30% of the capacity of the electrical power generation facilities in B.C. The existing facilities are operated as part of a coordinated system to allow BC Hydro to respond to seasonal and hourly changes in electricity demand.

W.A.C. Bennett Dam was completed in 1968 and is located 168 km upstream of the Alberta border. The Peace Canyon Dam was constructed in 1976 approximately 23 km downstream of the W.A.C. Bennett Dam near the town of Hudson's Hope. Water discharged from the G.M. Shrum Generating Station or released from discharge facilities (spillways, low level outlets) at W.A.C. Bennett Dam flows directly into the Dinosaur Reservoir. Water discharged from the Peace Canyon Dam and Generating Station enters the Peace River and flows downstream past the Site C dam site.

1.2 Project Overview and Description

The Site C Clean Energy Project (the Project) will be the third dam and generating station on the Peace River. The Project will provide up to 1,100 MW of capacity and about 5,100 GWh of energy each year to the province's integrated electricity system.

The components of the Project are:

- Dam, generating station, and spillways
- Reservoir
- Hudson's Hope shoreline protection berm
- Substation and transmission lines to Peace Canyon Dam
- Highway 29 realignment
- Quarried and excavated construction materials
- Worker accommodation
- Road and rail access.

This Construction Safety Management Plan (CSMP) applies to all activities undertaken in construction of the Project.

1.3 BC Hydro Safety Expectations

BC Hydro is committed to constructing the Project in a manner that protects worker and public safety and health. The Project will be constructed in accordance with applicable laws, regulations, conditions of the British Columbia Environmental Assessment Certificate, the Federal Decision Statement, and will be aligned with BC Hydro's Safety Policy.

1.4 Construction Safety Management Plan (CSMP)

The Construction Safety Management Plan (CSMP) for the Site C Clean Energy Project (the Project) provides guidance to all BC Hydro employees and contractors on the safety management requirements for construction of the Project. The CSMP provides performance-based safety requirements for the Project and provides contractors the basis for the development of Contractor Site Safety Management Plans (CSSMPs) prior to the commencement of construction activities. The CSMP applies to all construction activities undertaken as part of the Project.

The CSMP is the foundational document within the Project Safety Management Program, and is aligned with Section 35 of the Environmental Impact Statement (EIS).

Safety inspections and auditing will be performed throughout the construction period to monitor, evaluate, and report on the effectiveness of the CSMP and associated plans and procedures.

1.5 CSMP Review and Revision

BC Hydro will review the CSMP at least annually during construction, or more often as required, should further information become available.

2.0 Contractor Site Safety Management Plans (CSSMPs)

2.1 CSSMP Content

The CSMP provides the specifications that the CSSMPs must satisfy. Every construction activity must be conducted under a CSSMP that has been prepared by a Qualified Professional with the expertise relevant to that construction activity. Information required in CSSMPs will be specified in Contract Safety Schedules, and will include:

- site or activity specific details of planned work procedures
- hazard identification and management
- orientation and training requirements
- emergency management procedures, and
- safety monitoring to be implemented during construction.

Contractors shall retain qualified professionals to prepare CSSMPs to address site-specific hazards. Each CSSMP will be developed based on the nature of the site and the work.

2.2 BC Hydro Review of CSSMPs

BC Hydro must review and accept each prime contractor's CSSMP prior to the contractor commencing work at site.

CSSMPs may need to be revised during construction: for example, in response to changes in project design, construction procedures and methods, schedule, hazard identification or management, regulations or site conditions. Changes to CSSMPs will require review and acceptance by BC Hydro.

3.0 Safety Training: Orientation, Training and Tailboard Meetings

The activities identified in this Section shall be conducted as part of the Project to provide a basis for informing contractors and their crews of safety training requirements specified in the CSMP, CSSMPs, and Safety Schedules.

3.1 Safety Training Overview

It shall be the responsibility of the contractors to ensure that their staff and subcontractors are appropriately trained and competent to implement the requirements of the CSMP, the contract requirements and the CSSMP. Prior to the start of site work activities, the contractor will implement safety training programs necessary to train all persons performing Work on the Site. These training programs shall include all materials, actions and evaluation processes needed to allow workers to perform the required and assigned Work in a safe and competent manner. The contractor's safety training programs shall:

- comply with all requirements of the BC Occupational Health and Safety Regulation (WSBC OHSR), including procedures for reporting of safety incidents and emergencies;
- identify and address both general and task specific hazards;
- address the rights, obligations and duties of all persons engaged in the performance of the Work with respect to occupational health and safety;
- address the potential consequences of non-compliance with the Construction Safety Management Plan;
- be tailored to the tasks, duties and responsibilities of each person engaged in the performance of the Work;
- be delivered by qualified persons;
- include timely refresher sessions;
- include mechanisms for participants to evaluate and provide feedback with respect to the safety training sessions;
- be modified as and when required to respond to participant evaluations and feedback; and
- be documented, tracked and kept on file and made available for audit and review by Prime Contractors and BC Hydro personnel as required.
- all persons working on the project construction sites will be informed about the Construction Safety Management Plan (CSMP) during their initial orientation and have access to the CSMP. All workers will understand the requirements of the safety schedules and Contractor Site Safety Management Plan (CCSMP) as they apply to their work.

Prime Contractor's safety monitors and-or designated safety leads shall be on-site in the field during the work to maintain awareness and understanding of safety hazards, mitigations strategies and accepted behaviours and practices.

All those responsible for the management, implementation, instruction and operation of any aspect of the project safety plans shall be qualified and competent for their role.

3.2 Pre-Work Orientation Meetings

BC Hydro will provide orientation for all workers to the hazards of the overall site and the CSMP for the site.

Prime Contractors will ensure pre-work orientation meetings occur with workers prior to the initiation of work so that they are aware of the sitespecific hazards and safety requirements for work at their worksite.

Qualified persons shall provide the safety information necessary and record the meetings on the contractor Safety Pre-Work Orientation Record. When new workers first arrive at the Project Site to begin work, the contractor's supervisor shall inform the safety monitor or designated safety lead, and the safety monitor or designated safety lead shall provide orientation meetings before any work can proceed.

Contractors' staff shall sign and date the Safety Pre-Work Orientation Record confirming that they have received the materials and the presentation from the safety monitor, have been tested on and therefore understand the content, and will comply with the requirements stated. Signed Safety Pre-Work Orientation Records shall be made available to BC Hydro for review, audit, and to be managed as defined in the appropriate Safety Schedule document relating to the contract.

3.3 Pre-job Meetings

Worksite pre-job meetings shall be held prior to the commencement of work and at regular intervals thereafter, as required by the nature of the work. These meetings will be used to review safety requirements of the work, potential hazards and necessary safety precautions. All pre-job meeting information, including content pertaining to safety management and protection, shall be documented by the contractor and made available to BC Hydro as requested in accordance with document control guidelines outlined in the appropriate Safety Schedule.

4.0 Safety Management Activities

4.1 Formal Review

Safety plans shall have a formal evaluation, review and update function built into the plan with defined processes to assess and respond to changes, deficiencies and potential issues.

4.2 Incident Management System

Safety incidents shall be reported and tracked using BC Hydro's Incident Management System. This system will define: reporting and response times, incident levels, requirements relating to incident investigation and follow up and corrective action plan protocol.

4.3 Monitoring, Auditing and Testing

It is the responsibility of the **Prime Contractors** to formally monitor, evaluate and test their Contractor Site Safety Management Plan (CSSMP) to ensure continued ability to meet the

safety requirements of the Work and Site and to maintain compliance with laws, legislation and best business practice.

It is the responsibility of **BC Hydro** to audit and monitor the implementation of the Prime Contractors' CSSMP, practices and site work.

5.0 Construction Safety Management Plan Specifications

This section provides further detail on governance, guidance and direction to all BC Hydro staff, contractors and workers on the Project sites.

5.1 Emergency Response

BC Hydro has an Emergency Response Plan (ERP) that provides a framework, defines the structure and roles and responsibilities for BC Hydro to effectively respond to and manage major events or emergencies which may affect or have affected public/employee/contractor safety, BC Hydro's services, operations or assets, reputation, or the environment.

This Plan adheres to BC Hydro's Strategic Emergency Management policy and Safety and Health policy.

Strategic Emergency Management's Program Governance and Implementation Manual describes the BC Hydro Emergency Management Program overall, and the emergency management system in effect at all levels of the company.

Note that this plan is in the context of British Columbia's Emergency Program Act and the Hydro and Power Authority Act which set out the responsibilities of organizations involved in the management of emergencies.

Site C has an Emergency Action Plan (EAP) that integrates with the BC Hydro Emergency Response Plan and provides such items as response procedures, notification and activation protocols, and emergency contacts (both upstream and downstream of Site C). An Emergency Planning Guide will be developed for Site C as the project advances.

5.1.1 Emergency Action Plan

The Emergency Action Plan (or Local Operating Order) outlines the procedures to be followed when as emergency condition exists at Site C.

These procedures apply to all BC Hydro personnel, contractors and visitors.

The Emergency Action Plan (or Local Operating Order) is aligned with and supplemental to instructions in Site C's Construction Safety Management Plan.

As Site C construction progresses, BC Hydro will develop and update the Emergency Action Plan. The EAP will include: identification and mitigation of risk factors from Upstream Facilities, cofferdam, the Halfway River and the Moberly River.

The EAP will include:

- BC Hydro roles and responsibilities in the event of emergency incidents during Project construction;
- BC Hydro's responsibility for development of and Emergency Action Plan, Emergency Planning guide, Peace River Regional Emergency Response Plan, and other relevant plans including the Operations Maintenance and Surveillance manual;
- Known potential hazards and risks associated with construction activities that may require emergency response, rescue or evacuation;
- BC Hydro emergency response personnel and their contact information, and procedures for maintaining and communicating current contact information;

- BC Hydro requirements for incident management and reporting.

The EAP will be distributed in accordance with the applicable BC Hydro polices.

5.1.2 Emergency Planning Guide

An Emergency Planning Guide (EPG) is not an emergency plan. The purpose of and EPG is to clarify roles of BC Hydro and the emergency response agencies downstream of BC Hydro's dams and provide the important information to be used in the Emergency Plan of these agencies.

The EPG:

-Defines the emergency roles and responsibilities of BC Hydro and the emergency response agencies;

- Defines the hazards associated with the BC Hydro dam, and the corresponding notifications that would be issued by BC Hydro;

- Outlines how emergency planning can be maintained and improved over time;

- Provides key contacts.

Site C staff should be familiar with the existing Peace Canyon Emergency Planning Guide as they are downstream of Peace Canyon. In the event of a dam incident at Peace Canyon, Site C personnel may be notified and response, such as an evacuation may be required.

5.1.3 Prime Contractor Emergency Response Plans

Potential emergencies during Project construction that could impact people, property and the environment will be addressed in Prime Contractor Emergency Response Plans that will include:

- Identification and assessment of potential hazards and risks that may require emergency response, rescue or evacuation;
- Development and implementation of effective emergency management and response procedures, including incident command, relevant to the identified potential hazards and risks, and specific to the type and size of the potential emergency;
- Identification of the location, type and deployment methods of temporary and permanent emergency response equipment, resources and facilities, and procedures for signage, access, mobilisation, maintenance and replacement;
- A detailed and current contact list and communication and notification strategy
- Procedures for worker orientation and training, including working alone and evacuation procedures

Prime Contractor emergency response plans will be provided to BC Hydro, which will distribute to Aboriginal groups and to local and regional governments.

5.2 Fire Hazard and Abatement Plan

5.2.1 Objective

The objective of this Fire Hazard and Abatement Plan (FHAP) is to identify the requirements for fire prevention, fire response and fire management by the **Prime Contractor** during construction.

5.2.2 Statutory Requirements

All construction activities will be conducted in compliance with applicable federal and provincial legislation, and all associated permits (e.g., approvals, licences, certificates, etc.).

The legislation relevant to fire includes, but is not necessarily limited to, the:

- *Federal Hazardous Products Act* (RSC 1985, c. H-3) and associated Workplace Hazardous Material Information System (WHMIS);
- *Provincial Wildfire Act* (RSBC 2004, c. 31);
- *Provincial Workers Compensation Act* (RSBC 1996) and associated Occupational Health and Safety Regulation (BC Reg. 230/2011);
- *Provincial Transport of Dangerous Goods Act* (RSBC 1996, c. 458); and

All contractors will be required to ensure that they have all required permits necessary to undertake fire management relating to their contract work scope and work site.

5.2.3 Potential Fire Hazards, Mitigation and Safety

5.2.3.1 Potential Fire Hazards

During Project construction, site-specific work activities may create fire hazards. Potential causes of fire may include:

- temporary or permanent heating devices
- blasting
- electrical arc
- smoking
- hot works including welding etc.
- other industry related fires
- mobile equipment, including train generated

5.2.3.2 Mitigation and Safety Measures

Prime Contractors shall develop a Fire Hazard and Abatement Plan (FHAP) that will include the following:

The names and contact information of the individuals responsible for the implementation and maintenance of the FHAP.

- The names and contact information of the individuals responsible for the implementation and maintenance of the FHAP.
- Procedures for reporting emergencies to Site Emergency Responders, BC Hydro, local Fire Department and/or the B.C. Forest Service

- Procedures for emergency notification, evacuation and/or relocation of all persons in the building(s) under construction and on the site
- Procedures for temporary or permanent heating devices, blasting, electrical arc, smoking, other industry related fires; mobile equipment, including train generated hot work operations, management of hazardous materials, removal of combustible debris and the maintenance of emergency access roads
- Provision of a Hot Work permitting system
- An inventory of all explosives, flammable/ combustible liquids and compressed gases, including Material Safety Data Sheets (MSDS)
- A site plan that identifies the following:
  - designated assembly or muster areas and evacuation routes
  - required fire apparatus access roadways on the site and to/from site
  - the location of storage facilities for explosives, flammable/combustible liquids, compressed gas, Liquefied Petroleum Gas (LPG) containers, gas wells and pipelines
  - the location and type of fire equipment and fire protection systems
  - all buildings and structures

The Fire Hazard Abatement Plan must be reviewed by BC Hydro prior to the start of work at site. The FHAP must be revised as work progresses to reflect any changes in site layout, work scope, fire risk and or site fire hazard.

5.2.4 Fire Risk Assessment

Prime Contractors shall complete a comprehensive site specific hazard identification and risk assessment prior to beginning work at site. The assessment will identify all potential fire hazards, including locations of potential 'wild fire' hazards.

This assessment will be used to develop a work and site specific FHAP

The objective of the Fire Risk Assessment is to:

- Identify fire hazards
- Reduce the risk of those hazards causing harm to as low as reasonably practical
- Decide what physical fire precautions, work procedures and management arrangements are necessary to ensure the safety of workers on site and at adjacent facilities should a fire start.

Hazard identification and risk assessment shall be prepared by a qualified professional.

5.2.5 Fire Risk Reduction

5.2.5.1 Fire Prevention Procedures

Construction shall be coordinated so that planned permanent fire protection systems are installed and placed in service as soon as possible, prior to the introduction of any major fire hazards where practicable. Temporary fire protection systems shall be used where required during certain construction phases. Construction and installation of fire barriers and fire doors shall be given priority in the construction schedule for worker accommodation and any other structures.

As fixed water extinguishing systems are completed, they should be placed in service with water supply capacities based on available volumes. The extinguishing system will provide some degree of protection, especially where the full hazard is not yet present. However, when the permanent hazard is introduced, the water supply shall be capable of providing the designed systems demand.

A suitable location at the site shall be designated as the incident command post and supplied with site plans, emergency response information, access capability (where required) and specialized equipment as needed.

5.2.5.2 Smoking

Smoking shall be restricted to designated smoking area(s) within Construction sites and the Camp. Designated smoking areas shall meet applicable regulatory requirements and human impact standards and not be located near sources of dry fuel, explosives, liquid fuels and flammable/ combustible materials.

5.2.5.3 Wildfires

All contractors shall ensure that their work is carried out in compliance with the BC *Wildfire Act*.

5.2.5.4 Vehicles and Equipment

Vehicles and other mobile equipment shall not be parked in areas where there is tall, dry vegetation. Vehicles and equipment shall not to be left idling when parked for any extended period of time except under extreme cold winter conditions in controlled areas. The use of vehicles and equipment requiring gasoline, liquefied petroleum gas, and other fuels shall be restricted in the Powerhouse and only allowed based on exception and under documented and controlled conditions. Service areas for construction equipment shall not be located within the Powerhouse and fuel for internal combustion engines shall not be stored within the Powerhouse.

5.2.5.5 Access Roadways

The dam site, generating station/spillways, and temporary structures, including all worker accommodation, shall be accessible by the Fire Response equipment by means of roadways having all-weather driving surfaces to the principal entrance. Every required access opening shall be located not less than 3 m and no more than 15 m from the building face.

All roadways entering dam construction site shall:

- Have a clear width not less than 6 m and not be obstructed in any manner, including obstruction by parked vehicles. “No Parking” signs or other appropriate notices, or both, prohibiting obstruction shall be utilized and shall be maintained;
- Have a centreline radius not less than 12 m;
- Have an overhead clearance to the aforementioned structures on the dam site of not less than 5 m;
- Have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m;
- Be designed to support the expected loads imposed by firefighting equipment and be surfaced with material designed to permit accessibility under all climatic conditions;
- Have turnaround facilities for any dead-end portion of the access route more than 90 m long; and

- Be connected with a public thoroughfare.
- Be cleared during snow conditions or more frequently if severe weather conditions dictate

5.2.5.6 Egress Routes

The Powerhouse, office and construction building egress routes must be kept clear of construction material and equipment at all times. Escape routes and emergency exits must have the required lighting and signage, and all construction work areas must have at least two escape routes in different directions. Special attention shall be paid during the winter snow conditions to keep access from buildings and structures clear so as to not impede access to the muster area.

5.2.5.7 Hot Work Operations

The Fire Risk Management Plan (FHAP) and/or Contractor Site Safety Management Plan (CSSMP) shall provide detailed job and task specific procedures for managing all hot work.

5.2.5.8 Temporary Heating Equipment

All temporary heating equipment used on site shall be listed, tracked and its place of installation recorded on a site map that is kept current in Prime Contractors' FHAP. Temporary heating devices shall be installed in accordance with site standards and manufactures' recommended installation requirements.

5.2.5.9 Temporary Enclosures

During construction, temporary enclosures, including trailers, inside the Powerhouse shall be prohibited except where permitted by the individual responsible for fire prevention and fire protection (Prime Contractors or BC Hydro). Where the floor area of a combustible enclosure exceeds 9.3 m^2, or where the occupancy presents a fire exposure, the enclosure should be protected with an approved automatic fire extinguishing system (sprinkler protection). The sprinkler protection shall cover the interior and underside of any of these temporary enclosures.

Only non-combustible panels, flame-resistant tarpaulins, or approved materials of equivalent fire-retardant characteristics shall be used. Any other fabrics or plastic films used shall be certified as conforming to the requirements of Test Method #2 contained in NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

Temporary enclosures shall be equipped with a minimum of one fire extinguisher suitable for all classes of fires that are expected inside the enclosure. Fire extinguishers shall be located so that travel distance to a fire extinguisher does not exceed 15 m.

5.2.5.10 Construction Site Laydown Areas

Prime Contractors shall provide adequate fire mitigation and abatement equipment for all laydown areas that are associated with their work scope and work area(s).

5.2.5.11 Fire Protection Equipment

Prime Contractors are responsible for ensuring that the required equipment and trained resources to adequately use fire protection equipment are available and ready for use. The following component items shall be included where required.

- Fire alarms, sprinkler and emergency response systems shall be installed in the worker accommodations, worksites and temporary and permanent facilities as required by the hazard and risk assessment or the contract documents.
- Firefighting equipment, respiratory equipment, and emergency response services shall be provided by Prime Contractors as required across the Site.
- Fire extinguishers shall be of suitable quantity, type and size to address worksite fire related risks, as well as all applicable WSBC Regulations, and be located:
  - Within all fixed and mobile machinery;
  - At all buildings including worker accommodation facilities;
  - At all construction trailers;
  - At all storage sheds in excess of 45 square meters;
  - At all flammable and combustible storage areas;
  - At all liquefied petroleum fuel storage facilities;
  - At all laydown and materials and equipment storage areas
  - At all compressed gas storage facilities; and
  - At other areas identified through fire hazard assessment process.

5.2.5.12 Fire Response and Suppression

Prime Contractors shall develop maps which identify the location of emergency exits, alarm systems, firefighting equipment, the storage location of flammable and hazardous materials, and critical facilities.

Fire Response procedures shall be developed in accordance with the FHAP, and include the following:

- Immediate on-site notification of fire via alarms, or emergency communication (i.e., two-way radio channel);
- Shutdown of critical facilities, and hazardous material storages areas; Containment and extinguishment of the fire by trained workers, if safe to do so;
- Evacuation of worksites and buildings occupants to identified muster areas; and
- Notification of emergency responders (including Emergency Management BC and the BC Wildfire Management Branch, and local fire departments).
- In accordance with our emergency services plan, we have developed and communicated a site access procedure for emergency responders

5.2.6 References

BC Hydro. July 16, 2013. Safety Policy.

BC Wildfire Assessment Branch. 2012. A Guide to Fuel Hazard Assessment and Abatement in British Columbia. Accessed: April 23, 2013.
http://bcwildfire.ca/Industry_Stakeholders/Industry/assessment_abatement.htm

Building Policy Branch (2012). BC Fire Code.

http://www.bccodes.ca/fire-code.aspx

Partners in Protection. 2003. FireSmart: Protecting your Community from Wildfire. Accessed: April 24, 2013.

https://www.firesmartcanada.ca/resources-library/protecting-your-community-from-wildfire

5.3 Public Safety Management Plan

5.3.1 Objective

The objective of this Public Safety Management Plan (PSMP) is to describe the requirements for BC Hydro and its contractors in managing public safety. The PSMP applies to all work sites and all activities associated with construction of the Project.

Each Prime contractor must:

- conduct a public safety risk assessment as described below; and
- implement appropriate mitigation measures.

Contractor Public Safety Management Plans will be provided to Aboriginal groups and to local and regional governments for information.

The operations PSMP will be developed prior to reservoir filling.

5.3.2 Risk Assessment

BC Hydro will provide its understanding of hazards to the public associated with Project construction in the Project Activity Zone, in particular hazards resulting from:

- construction of coffer dams, diversion tunnels, transmission line construction, substation construction, shoreline protection, line construction, quarry development and conveyor belt systems.
- Site and reservoir clearing and associated debris
- Operating large heavy earth moving, clearing and excavating equipment
- Increased traffic associated with construction activities.
- Submerged hazards during reservoir filling

Each Prime contractor must consider the information provided by BC Hydro, and their own knowledge of the site and construction activities in conducting a risk assessment and in implementing appropriate mitigation measures.

The risk assessment will be based on the steps described below.

Appendix A provides the public safety risks and associated activities that BC Hydro has identified to date.

5.3.3 Risk Ranking

Risk ranking consists of a combination of likelihood and consequence. Likelihood refers to the possibility that members of the public will suffer an injury from the activity. Consequence refers to the severity of injury as a result of the worst probable outcome. Because the likelihood of an incident resulting in a minor injury is higher than the likelihood of an incident resulting in a serious injury, as consequences rise, likelihood goes down. Because the final risk ranking is achieved by multiplying the likelihood score by the consequence score, reducing either likelihood or consequence will reduce the total risk score.

5.3.3.1 Likelihood

The Incident Likelihood Rating (ILR) within the Risk Matrix table on the next page refers to:

Descriptor	Definition of Likelihood	Rating (ILR)
Almost certain	More than 10 occurrences in the hazardous area or in similar construction sites in any one of the last three years **Or** 25 or more occurrences in total at this site or in similar construction sites in the last 3 years	5
Common	More than 2 occurrences in the hazardous area or in similar construction sites in any one of the last 3 years	4
Possible	Any occurrence in the hazardous area or in similar construction sites in the last 6 years	3
Unlikely	Any occurrence in the hazardous area or in similar construction sites in the last 10 years	2
Rare	No known occurrences in the hazardous area or in similar construction sites in the last 10 years	1

5.3.3.2 Consequence

The Incident Consequence Rating (ICR) within the Risk Matrix table on the next page refers to:

Anticipated Incident Consequence	Description of Consequences	Rating (ICR)
Fatality	Fatality	5
Critical	Permanent Partial or total Disability	4
Major	Medical Treatment or Stranding (rescue required)	3
Minor	First Aid; or Stranding (self-rescue possible)	2
Insignificant	No Attention Required	1

Risk Rating			Incident Consequences				
			Insignificant	Minor	Major	Critical	Fatality
			1	2	3	4	5
Incident Likelihood	Almost certain	5	MEDIUM LOW (1)	HIGH	HIGH	HIGH	HIGH
	Common	4	LOW	HIGH	HIGH	HIGH	HIGH
	Possible	3	LOW	MEDIUM	HIGH	HIGH	HIGH
	Unlikely	2	LOW	LOW	MEDIUM	HIGH	HIGH
	Rare	1	LOW	LOW	LOW	LOW	MEDIUM LOW (2)

NOTES

1: in cases when the hazard identification and assessment process indicates that there are no adverse consequences related to a particular activity (and the ICR rating assigned to this activity is 0), the resulting risk rating is **LOW** instead of **MEDIUM.**

2: In specific instances where all reasonable measures have been taken to reduce exposure to zero for a dangerous area, a risk rating of LOW can be assigned for a consequence rating of 5 and a likelihood rating of 1.

5.3.3.3 Risk Levels

Determining the risk level of each activity follows a three part process.

1. Incident Likelihood and Incident Consequence ratings are determined by examining the "as is" condition of each activity within a component area with respect to identifiable hazards with no risk reduction measures in place.
2. The overall risk level of the activity being examined is then determined by multiplying the Likelihood and Consequence ratings together.
3. New or modified risk reduction measures are then applied and Likelihood and Consequence ratings are reassessed with the additional measures.

The above three steps are repeated for each activity within the component area until sufficient risk reduction measures are implemented to eliminate or to significantly reduce initial high risk levels to medium or low.

High		8 to 25
Medium		5 to 7
Low		1 to 4

5.3.4 Risk Mitigation

Each Prime contractor must take into account the results of the risk assessment and identify the appropriate mitigation measures. The contractor will employ the following hierarchy (in order of priority) to identify and implement appropriate mitigation measures prior to the commencement of relevant construction activities:

1. ***Elimination of exposure****: Exclude the public from dangerous areas through the use of effective means, such as* fencing, gates and barricades, safety booms, security gate guard house

2. **Substitution of different procedures**: e.g., changes to construction procedures

3. **Engineering**: e.g., Innovative barricades, modification of equipment, lighting

4. **Administration**: e.g., Public education, effective signage

5. **Protection of persons**: e.g., security patrol, video surveillance

Selection of the appropriate risk reduction measure will depend upon the nature and degree of risk each safety hazard represents to the public. The practicability and effectiveness of implementation and the site-specific conditions must be taken into account in the choice of risk reduction measures used.

5.3.4.1 Public Notifications

Public Notification must be in accordance with the Construction Communications Plan.

5.3.4.2 Boater Safety

The purpose of this section of the Public Safety Management Plan is to increase public awareness of safety hazards, including navigational hazards, access restrictions and closures during Project construction.

5.3.4.3 Boater Communication Protocol

The measures implemented under the Boater Communications Protocol (BCP) are intended to inform boaters about construction activities that may affect navigational use, such as:

- Areas closed to public boating (e.g., dam site construction area);
- Dam site upstream emergency vessel pullout;
- Vegetation clearing areas and schedules affecting navigation;
- Areas with navigation restrictions /hazards (e.g., in-stream work areas, temporary clearing bridges);
- Reservoir and downstream Boat Launches access and construction schedules;
- Hudson's Hope Shoreline Protection activities and schedule;
- Navigation markers, safety warning signs and channel markers (as outlined in the PSMP and based on CDS guidelines);
- Radio communications protocols;
- BC Hydro community relations contact information;
- Dam site vessel portage program; and
- Information on ongoing navigation and points of access to enable navigation to continue throughout construction.

The BCP will be updated annually to reflect comments provided by stakeholders.

5.3.4.4 Responsibilities

BC Hydro is responsible for:

- Developing and implementing the BCP
- Communicating with the boating public in accordance with the Construction Communication Plan.

Prime Contractors are responsible for:

- providing to BC Hydro relevant information regarding construction schedules and activities that may affect boater safety.

5.3.4.5 Boater Communication

Communications regarding boater safety will be provided to the following groups in accordance with the Construction Communication Plan.

Group(s)
Blueberry River First Nations
City of Fort St. John
Dene Tha' First Nation
District of Chetwynd
District of Hudson's Hope
District of Taylor
Doig River First Nation
Duncan's First Nation
Fort Nelson First Nation
Halfway River First Nation
Horse Lake First Nation
Kelly Lake Metis
McLeod Lake Indian Band
Métis Nation
Ministry of Forests Lands and Natural Resource Operations
North Peace Rod and Gun Club
Peace Country River Rats
Peace River Regional District
Prophet River First Nation
Saulteau First Nations
RCMP
Transport Canada
Trap Line Holders
West Moberly First Nations

The following information will be posted at existing public boat launches and recreational river access points (as identified in The Peace River Angling and Recreational Use Creel Survey 2008-2009 (LGL, 2010)) along the Peace River from Peace Canyon Dam to Peace Island Park:

- Construction staging;
- Navigational restrictions bulletins;
- Areas of permitted navigational use;
- Mapping;
- Dam site vessel portage program; and
- Contact information.

5.3.4.6 Overhead structures

Signals, markings and notifications, relating to overhead structures such as towers and conductors crossing navigable waters will be installed in accordance with the requirements of authorizations issued by Transport Canada under the *Navigation Protection Act*.

5.3.4.7 Management of public access

Booms and Buoys

In order to manage public water-based access during construction, public safety booms will be installed approximately 3km upstream and approximately 3.5 km downstream of dam site. Based on public safety boom installation requirements it is anticipated that interim measures (e.g. patrol vessel) will be required for an estimated three months to manage public water-based access into the dam site construction area.

The upstream dam site public safety boom will be installed on an angle to minimize the risk that boaters approaching the boom will be trapped against the boom. On the angled boom, the current will drift the boaters towards shore. An emergency vessel pullout will be constructed near the upstream public safety boom.

The upstream public safety boom will be replaced by a debris boom prior to river diversion to prevent floating debris passage through the diversion tunnels. Safety buoys will be attached to log debris booms to improve their visibility from the water.

Debris booms will be installed, maintained and removed subject to authorisations under the Navigation Protection Act. This may include direction from Transport Canada to remove these booms in the event of a suspension of construction activities.

Public access to the Peace River upstream and downstream of the dam site will be maintained during construction through: 1) at least one of the existing upstream boat launches at Lynx Creek and Halfway River remaining available, and 2) existing downstream boat launch at Peace Island Park,

Fences

Fences will be installed as required to prevent access to construction sites from the water. The design and location of such fences will be dependent on site conditions.

5.3.5 References

LGL Limited (LGL). 2010. Peace River Angling and Recreational-Use Creel Survey 2008–2009. Prepared by D. Robichaud, M. Matthews, A. Blakely, and R. Bocking.

5.4 Traffic Management Plan (TMP)

5.4.1 Background

The potential effect of the Site C Clean Energy Project (the Project) on public vehicle-traffic was assessed in Section 31 Transportation of the Project's Environmental Impact Statement (EIS). The local assessment area included the road and rail network within the Project Activity Zone, Highway 97 between Taylor and Dawson Creek, and the North Peace Regional airport.

As stated in Section 31 Transportation and Section 35 Summary of Environmental Management Plans of the EIS, contractors will develop and adhere to Traffic Management Plans throughout the Project.

This Traffic Management Plan (TMP) addresses Project related vehicle-traffic (traffic).

5.4.2 Objective and Scope

The TMP applies to the dam site, other work sites that will be influenced by Project-related traffic including, but not limited to, public roads in the Peace River Regional District (PRRD), Wuthrich Quarry, West Pine Quarry, Highway 29, Hudson's Hope Shoreline Protection, Petroleum Development Roads, Project Access Road, Jackfish Lake Road, Highway 97 and the transport of extraordinary loads.

The objective of this document is to describe the measures that will be used to mitigate the adverse effects of the Project on traffic delays and collision frequency.

The scope of the Traffic Management Plan includes the following:

- Maximize the use of existing access corridors;
- Equip Project vehicles travelling on Project access roads with VHF/UHF communication radios;
- Control and/or restrict access where required, and as discussed with the British Columbia Ministry of Transportation and Infrastructure (MOTI);
- Identify access roads that are constructed specifically for the Project on BC Hydro owned land or Crown land to be decommissioned after Project use;
- Public safety measures;
- Post speed limits on all construction access roads that are constructed specifically for the Project on BC Hydro owned land or Crown land;
- Work schedules, subject to safety considerations, to minimize delays and nuisance to the public caused by the realignment of Highway 29, particularly during peak visitor periods;

- Inclusion of Traffic Control Plans, Public Information Plans, Incident Plans, and Implementation Plans consistent with MOTI guidelines;
- Identification of all road modifications, realignments, and improvements on Highway 29 North, Highway 29 South, Jackfish Lake Road, and North Bank Minor Roads that are required to ensure access is maintained and service levels meet the appropriate MOTI standards;
- Construction of a paved brake-check before the start of the 10% grade on Canyon Drive west of Hudson's Hope and make it a mandatory requirement for Project-related trucks to stop and check vehicle brakes;
- In consultation with MOTI, identify any additional measures that may be required for public safety (signage, signals, illumination, monitoring etc.);
- Follow best management practices as outlined in Traffic Management Guidelines for Work on Roadways (BC Ministry of Transportation 2001 and as amended from time to time);
- On an annual basis during construction and during each year when Project traffic will be using each identified intersection, traffic counts and monitoring of traffic operations as described in Section 4.3.
- Annual monitoring during construction of traffic operations on local roads to determine if road restrictions for Project-related traffic should be implemented, in accordance with appropriate MOTI standards; and
- Implement the measures described in Section 2.7 90 days prior to commencement of operations.

This Traffic Management Plan establishes measures for identifying and mitigating effects on local transportation infrastructure resulting from Project activities.

5.4.3 Regulatory Context

Traffic is regulated under a variety of legislation and bylaws, including the federal *Transportation of Dangerous Goods Act*, the British Columbia *Transportation of Dangerous Goods Act* and the British Columbia *Workers Compensation Act*. British Columbia's *Motor Vehicle Act* and *Commercial Transport Act* provides legislation regarding the use and operation of vehicles on provincial roads.

In addition, traffic management guidelines are outlined in the MOTI's Traffic Management Guidelines for Work on Roadways (2001) and Traffic Control Manual for Work on Roadways (1999).

5.4.4 Mitigation Measures

In order to address the potential effects resulting from increased traffic during the construction phase of the Project, BC Hydro and its contractors will implement a number of mitigation measures, as described in this section of the TMP. These measures range from processes that contractors will implement during the conduct of their work, through to the construction of new infrastructure that will benefit communities beyond the Project's construction phase. Unless otherwise specified, all measures described in this section relate to the Project's construction phase.

BC Hydro also prepared the Traffic Management Plan: Carpool and Commuter Program, which outlines the tools that BC Hydro and its contractors will employ to promote a carpool and commuter program for commuting Project workers during the Project construction phase (Appendix C).

Please see the Construction Environmental Management Plan, Section 4.17 for further information about transportation related measures to reduce wildlife – vehicle collisions.

5.4.5 Traffic Management Plans

Prime Contractors will develop and adhere to Traffic Management Plans throughout the construction and operation phases of the Project.

Where applicable to the activities being undertaken, contractors will identify measures in their Traffic Management Plans consistent with the measures described below related to:

- public safety measures;
- transportation and access routes;
- control of and restrictions for Project roads;
- access roads to be decommissioned after Project use;
- speed limits;
- traffic control measures;
- management of Project-induced traffic delays;
- brake checks;
- runaway lanes;
- road maintenance;
- snow removal and stockpiling; and
- use of the Canyon Drive brake check by Project related trucks (BC Hydro 2013f).

Prime Contractors are required in their Traffic Management Plans to follow best management practices as outlined in Traffic Management Guidelines for Work on Roadways (BC MOTI 2001 and as amended from time to time).

Prime Contractors retained by the Ministry of Transportation and Infrastructure to construct improvements to public roads - Old Fort Road, 240 Road, 269 Road, 271 Road and Highway 29 - will be required to develop traffic management plans in accordance with the British Columbia Ministry of Transportation and Infrastructure's Standard Specifications for Highway Construction. These plans will include a traffic control plan, a public information plan, an incident management plan and an implementation plan. The traffic control plan will be developed by a Professional Engineer registered in British Columbia with experience in preparing traffic control plans. Contracts for such public road improvements may include additional requirements of the contractor such as minimum amounts of construction signage and requirements for detours or road closures, all as approved by the British Columbia Ministry of Transportation and Infrastructure.

Prime Contractors working on the dam site will be required to develop and submit traffic control plans to address traffic safety with regard to construction vehicles entering and exiting public roads from provincial quarry sites - Wuthrich Quarry and West Pine Quarry - from which materials will be obtained for improvements associated with the Project.

5.4.5.1 Highway 29 Realignment

In addition to the requirements above, the contractor or contractors preparing the Traffic Management Plans for Highway 29 realignments must identify work schedules, subject to safety considerations, to minimize delays and nuisance to the public caused by the realignment of Highway 29, particularly during peak visitor periods.

The Contractors will develop their public information plans in coordination with BC Hydro's overarching Public Information Plan.

5.4.5.2 General Measures

Vehicles destined for the dam site and transporting labour, materials and equipment will be required to comply with the *Motor Vehicle Act* and the *Commercial Transport Act*, which will include operating a vehicle in accordance with regulatory and advisory road signs and pavement markings. The RCMP and the MOTI Commercial Vehicle Safety and Enforcement (CVSE) will perform compliance activities as part of their standard procedures for traffic enforcement, and BC Hydro will have general access to non-compliance events through on-going liaison with the RCMP, in accordance with British Columbia's *Freedom of Information and Protection of Privacy Act*.

To minimize the Project's footprint, use of existing highways and roads will be maximized to transport labour, materials and equipment. In some instances, existing roads and highways will be improved, as outlined in this TMP.

BC Hydro and Prime Contractors will identify and apply appropriate public safety measures as identified in the traffic management plans prepared by each contractor. In addition the road improvements described in section 5.4.6 will improve safety for the public using the regional road network.

For vehicle and driver safety, BC Hydro and Prime Contractor vehicles will be equipped with radios, or construction staff will be issued hand held radios, which they will use when operating Project vehicles on Project access roads or when personnel are in close proximity to operating vehicles. Contractors will be required to identify appropriate speed limits in their Traffic Management Plans not greater than road design speeds, and to post and enforce speed limits on all construction access roads on the dam site. BC Hydro will monitor the Contractors' records associated with such speed enforcement.

BC Hydro will also ensure that radar speed signs are available to be deployed on selected public roads with Project related traffic. Radar speed signs would primarily be deployed on the North Bank Roads but could be reassigned during Project work in other areas as warranted.

5.4.5.3 Controlled and Restricted Road Access

The roads on the dam site will not be public during the Project construction phase. To support the safety of the public, BC Hydro will ensure that only authorized traffic is able to access the dam site by controlling access to the dam site on the north and south banks at all times throughout the Project construction phase through the use of security gates. (EIS, Vol. 1, Vol. 4).

5.4.5.4 Clearing Access Roads

Temporary and permanent roads will be used to provide access for equipment undertaking vegetation clearing and removal from the Project Activity Zone. Where feasible, existing access

roads will be used and upgraded as required in accordance with applicable British Columbia and Canadian guidelines and codes. Temporary clearing access roads will be located, designed and later deactivated in accordance with British Columbia standards and applicable guidelines (these can be found in the *B.C. Forest Act*, *B.C. Forest and Range Practices Act* and the B.C. MFLNRO Engineering Manual). Most of the temporary roads will be located to provide access for reservoir clearing. Due to the existence of the 138 kilovolt transmission lines, road access exists along much of the proposed route for the transmission corridor (BC Hydro 2013b).

5.4.6 Road Modifications, Realignments and Improvements

The following table identifies all road modifications, realignments, and improvements on the North Bank Roads, Highway 29 and Jackfish Lake Road that are required to provide for enhanced levels of safety over existing conditions, and to ensure that access is maintained and that service levels meet the appropriate MOTI standards.

Road Segment	Modification, Realignment and/or Improvement
North Bank Minor Roads	
Old Fort Road	Shoulder widening, illumination, signage
240 Road	Shoulder widening, hard-surfacing, illumination, signage
269 Road	Shoulder widening, realignment, hard-surfacing, signage
271 Road	Shoulder widening, signage
Highway 29 North	Realignment of 30 kilometres, improved cross-section, new bridges, signage
Bear Flat / Cache Creek	8.5 kilometre realignment and improvements, complete with 200m (approximately) long bridge
Halfway River	4.0 kilometre realignment and improvements, complete with 640m (approximately) long bridge
Farrell Creek East	6.0 kilometre realignment and improvements
Farrell Creek	2.0 kilometre realignment and improvements, complete with 150m (approximately) long bridge
Dry Creek	1.5 kilometre realignment and improvements, complete with 170m (approximately) long culvert
Lynx Creek	8.0 kilometre realignment complete with 160m (approximately)

	long bridge
Jackfish Lake Road	Shoulder widening and hard-surfacing (should contractors elect to haul large volumes of riprap by road instead of rail)

Source: BC Hydro 2013a and 2013c

5.4.7 Highway 29

The Ministry of Transportation and Infrastructure, on behalf of BC Hydro, will re-align and improve approximately thirty kilometres of Highway 29 between Bear Flat and Hudson's Hope as a result of the creation of the reservoir. The work will involve geometric improvements, wider shoulders, new bridges and paved surfaces and access improvements.

Contractors retained by the Ministry of Transportation and Infrastructure to construct improvements to Highway 29 may have to construct temporary traffic detours in order to complete such improvements. Contractors will be required to design such detours in accordance with the British Columbia Ministry of Transportation and Infrastructure and Transportation Association of Canada design guidelines, and to construct such detours in accordance with British Columbia Standard Specifications for Highway Construction and the Traffic Management Guidelines for Work on Roadways. These conditions also apply to temporary roads that contractors will have to construct to connect existing sections of Highway 29 with newly constructed sections. This may require that the contractors employ alternating single-lane traffic controlled by flag persons or short-duration road closures. Standard traffic control measures such as signage, road markers and flag persons will be used for guiding traffic during construction (BC Hydro 2013a).

5.4.8 Jackfish Lake Road

Should the Main Civil Works' contractor (i.e., the contractor selected to construct the dam) elect to haul riprap from West Pine Quarry to the dam site by road (Highway 97, Highway 29 and Jackfish Lake Road), BC Hydro will require that it strengthen the road base and hard-surface thirty-one kilometres of Jackfish Lake Road, which may require widening of some sections. In addition, the contractor will widen the Jackfish Lake Road shoulders along the first sixteen kilometres to meet current Ministry of Transportation and Infrastructure rural collector standards, potentially including two 1.5 metre wide paved shoulders (BC Hydro 2013c).

5.4.9 Canyon Drive Brake Check

Prior to the haul of riprap from Portage Mountain, BC Hydro will construct a paved brake check area on Canyon Drive before the start of the 10% grade. All commercial vehicles, including trucks hauling riprap from Portage Mountain, will be required to use the brake check.

BC Hydro committed to exploring and installing, if feasible, either arrestor beds or runaway lanes, or both, on Canyon Drive (BC Hydro 2013c). Such facilities were considered by BC Hydro, however neither will be constructed on the basis of:

- The low probability of a truck experiencing significant brake fade due to the modest height/grade combination of the descent down Canyon Drive;
- Should a truck experience some degree of brake fade, there is a lower probability of it utilizing an arrestor bed or runaway lane due to a driver's concern for damage/safety in

using an unusual Dragnet-type installation given its close proximity to the bottom of the hill;

- The very high cost of a Dragnet-type runaway lane on the right hand side; and
- The impact, high cost, and safety concerns of a gravity-type arrestor bed / runaway lane on the left hand (opposing) side of Canyon Drive.

5.4.10 Highway 97 at Taylor Measures

BC Hydro will implement the following measures by fall 2017 in partnership with MOTI to support minimizing fog-related (vehicle) collisions and maintain overall road safety on Highway 97 near Taylor:

- Illumination of continuous lightning along Highway 97 through Taylor, from Birch Avenue west to 100th Street access at McMahon Drive, and intersection lightning at Highway 97 and Pine Avenue, 103rd Avenue, and Cherry Avenue;
- Installation of changeable message signs on Highway 97 on the south Taylor Hill and on the hill north of Taylor, to be operated as part of the MOTI network, that will provide drivers with advanced notification of road conditions, including notification of fog conditions; and
- Installation of a highway webcam in Taylor to monitor fog conditions, to be operated as part of the MOTI network. The location will be determined in consultation with Taylor and MOTI.

5.4.11 Transport of Extraordinary Loads

Project components will need to be transported from the port of entry to Site C dam utilizing highways within Alberta and British Columbia. Some of these components will require routing consideration based on weight and dimensions and possible highway infrastructure limitations (BC Hydro 2013a).

Contractors transporting extraordinary loads to the dam site will consider the following:

- on some bridges there may be clearance issues with railing heights and possible width restrictions that will not require structural improvements but will require possible temporary removal of railing to increase height clearance and width;
- transport configurations must meet the 85 tonne route bridge restrictions and will be required to go through the Ministry of Transportation and Infrastructure's Commercial Vehicle's Safety Enforcement (CVSE) extraordinary load application process;
- seasonal load restrictions will affect timing of transporting over weight loads; and
- the Ministry of Transportation and Infrastructure will require that contractors cross bridge structures with traffic closed and travel down the centre lane for loads that are too wide to cross with oncoming traffic. Travel time restrictions such as Monday to Friday, travel time of day restrictions, pilot car requirements and a traffic management plan including public communications will be part of the approval process (BC Hydro 2013a).

5.4.12 Traffic and Pavement Monitoring

5.4.12.1 Traffic Monitoring

BC Hydro undertook traffic count surveys prior to the beginning of construction at the locations identified below within the PRRD in order to establish baseline traffic volumes. Baseline data was collected at more intersections than are currently included in the monitoring program to allow additional intersections to be added later if warranted. Count data will be shared with MOTI and local municipalities.

BC Hydro completed baseline traffic counts and monitoring of traffic operations at the following intersections:

- Highway 29 North (Beattie Drive) at Canyon Drive in Hudson's Hope;
- Highway 29 North at Clarke Drive in Hudson's Hope;
- Highway 29 North at Farrell Creek Road;
- Highway 29 North at Highway 29 East of Halfway River (Count station 14-011);
- Highway 29 South at Jackfish Lake Rd;
- Highway 97 North at Highway 29 North near Charlie Lake;
- Highway 97 North at 271 Road northwest of Fort St. John;
- Highway 97 intersections in Fort St. John, including:
    - Highway 97 at 269 Road in Fort St. John
    - Highway 97 at Old Fort Road in Fort St. John
    - Highway 97 at 100th Street in Fort St. John
    - Highway 97 at 85th Avenue in Fort St. John
    - Highway 97 at 86th Street in Fort St. John
    - 100th Avenue at Western Bypass Road;
- Highway 97 South at Highway 29 South in Chetwynd; and
- North bank local roads, including:
    - Old Fort Road at 242 Road
    - Old Fort Road at Alaska Road
    - Old Fort Road at 85th Avenue
    - Old Fort Road at 240 Road
    - 240 Road at 269 Road
    - 85 Avenue at 100th Street.

Based on the construction schedule and estimated Project traffic, BC Hydro will monitor traffic on two different schedules. Schedule 1 is shown in Table 2 and was used in Year 1 to collect information regarding seasonal variation in traffic and will be used in the year before peak workforce and the peak workforce year as a larger workforce may increase the likelihood of changes in traffic operations at intersections near the dam site. The counts will include one three-hour count in the AM peak period and one three-hour count in the PM peak period. Schedule 2 shown in Table 3 will apply in the other years of construction.

Table 1 - Quarterly Monitoring Periods

Q1	January - February
Q2	April - May
Q3	July - August
Q4	October - November

Table 2 – Schedule 1 – Peak construction yearsYear 1, Year before Peak Workforce and Peak Workforce Year

		Project Year 1			
Road Corridor	**Intersection**	**Q4**	**Q1**	**Q2**	**Q3**
Hwy 29	Canyon Drive/Beattie (Hwy 29)			1	
Hwy 29	Hwy 29(Canyon Dr)/Clarke			1	
Hwy 97	Hwy 97/269 Rd (Year 1 Only)[1]			1	
Hwy 97 N	Hwy 97/Old Fort Road	1	1	1	1
Hwy 97 N	Hwy 97/100 Street	1	1	1	1
Hwy 97 N	Hwy 97/85th Avenue	1	1	1	1
Hwy 97 S	Hwy 97/Hwy 29 (Chetwynd)			1	
Jackfish Lake Road	Hwy 97/Jackfish Lake Road			1	
NB Roads	Old Fort Road/85 Avenue	1	1	1	1
NB Roads	85th Avenue/100 Street	1	1	1	1
NB Roads	Dam Site Entrance – Gate B	1	1	1	1
NB Roads	Dam Site Entrance – Gate D[2]	1	1	1	1

Table 3 – Monitoring Schedule 2 - Off-peak construction years

		Off-peak Project Years			
Road Corridor	**Intersection**	**Q4**	**Q1**	**Q2**	**Q3**
Hwy 29	Canyon Drive/Beattie (Hwy 29)			1	
Hwy 29	Hwy 29(Canyon Dr)/Clarke			1	
Hwy 97 N	Hwy 97/Old Fort Road			1	
Hwy 97 N	Hwy 97/100 Street			1	
Hwy 97 N	Hwy 97/85th Avenue			1	
Hwy 97 S	Hwy 97/Hwy 29 (Chetwynd)			1	
Jackfish Lake Road	Hwy 97/Jackfish Lake Road			1	
NB Roads	Old Fort Road/85 Avenue			1	
NB Roads	85th Avenue/100 Street			1	
NB Roads	Dam Site Entrance – Gate B	1	1	1	1
NB Roads	Dam Site Entrance – Gate D[1]	1	1	1	1

BC Hydro finalized the Traffic Monitoring and Mitigation Plan - Fort St. John and North Bank Area Roads to provide additional detail regarding traffic monitoring with the City of Fort St. John in April 2016. BC Hydro will implement the traffic performance monitoring measures in the plan in addition to the measures described above for the four intersections not identified in the Appendix B.

During construction of the Hudson's Hope Shoreline Protection, BC Hydro will assess traffic operations at the intersection of Highway 29 and Canyon Drive in Hudson's Hope to confirm estimated traffic delays resulting from construction (as reported in Section 34 Transportation of the EIS), and will consider implementing options for mitigating westbound traffic delays such as construction of a dedicated left-hand turn slot or changing intersection priority by revising pavement markings and signing (BC Hydro 2013a).

5.4.12.2 Pavement Condition Monitoring

BC Hydro, through consultation with the Ministry of Transportation and Infrastructure, has established an evaluation process to determine the road surface and base condition. The Ministry conducts pavement condition monitoring on all of its main numbered highways every two years and on its side roads every four years, normally in one lane direction during each survey. The Ministry has agreed to enhance this program on routes used by the Project to every two years for both numbered highways and side roads, and to survey these sections in both directions. The results of these surveys will assist the Ministry in determining if there is any

acceleration in the wear of the pavement surface and if remedial measures are required. BC Hydro will fund this enhanced monitoring and remedial measures as determined by the Ministry through analysis of the pavement monitoring data.

5.4.13 References

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BC Hydro. 2013b. *Site C Clean Energy Project Environmental Impact Statement: Volume 1 Appendix A Vegetation Clearing and Debris Management Plan*. Vancouver, BC.

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BC Hydro. 2013e. *Site C Clean Energy Project Environmental Impact Statement: Volume 4 Appendix B Project Traffic Analyses*. Vancouver, BC.

BC Hydro. 2013f. *Site C Clean Energy Project Environmental Impact Statement: Section 35 Summary of Environmental Management Plans, Section 35.2.1.4 Traffic Management Plan*. Vancouver, BC.

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District of Taylor and BC Hydro. 2014. *Site C Clean Energy Project Community Agreement Between BC Hydro Power and Authority and District of Taylor*. January 27, 2014.

RCMP. 2012. Site C Road Infrastructure Meeting with RCMP, Commander E. Brewer and Staff Sergeant G. Flewelling, In-person meeting with A. Izett, September 20th, 2012.

5.5 Worker Health and Safety Management Plan (WHSMP)

5.5.1 Objective and Scope

The objective of the worker health and safety management plan is to meet BC Hydro's obligations in communicating all known hazards and for Prime Contractors to mitigate and control risk to workers' health and safety.

5.5.2 Statutory Requirements

The legislation that contains provisions relevant to workers health and safety includes, but is not necessarily limited to the:

- *Federal Transportation of Dangerous Goods Act* (SC1992, C. 34);
- *Federal Hazardous Products Act* (RSC 1985, C. H–3) and associated Workplace Hazardous Materials Information System (WHMIS):
- *Provincial Worker's Compensation Act* (RSBC 1996) and associated Occupational Health & Safety Regulation (BC REG .230/2011)
- *Provincial Transportation of Dangerous Goods Act* (RSBC 1996, C458);
- *Provincial Safety Standards Act*, 2003 (SBC 2003)

It is the Prime Contractors' responsibility to ensure that all required permits and safe work plans necessary to manage risk to workers health and safety are in place prior to the start of construction activities.

5.5.3 Project Effects, Mitigation and Safety Measures

5.5.3.1 Project Effects

Hazards in and around the active construction site have the potential to affect workers' health and safety. These hazards may relate to gravitational, chemical, pressure, kinetic, electrical or social energy sources.

5.5.3.2 Mitigation and Safety Measures

Prior to commencing activities on the site, Prime Contractors shall:

- Engage a qualified professional to develop a detailed, site-specific worker health and safety management plan
- Retain qualified safety resources for the construction site depending on the scope of the project and competency required to meet WorkSafeBC Regulations
- Provide Prime Contractors' Worker Health and Safety Management Plan to the identified BC Hydro representative for review as to completeness prior to the start of work.

5.5.4 Safety Management and Leadership

All Prime Contractors must submit a site-specific Occupational Health and Safety Program and Plan to BC Hydro. The plan must be accepted by BC Hydro prior to the start of work

The site-specific plan and program shall include:

- An Occupational Health & Safety Policy that outlines the Prime Contractor's intentions related to planning, compliance, responsibility, communication, training and

performance. The policy must illustrate how these components are structured and will be implemented to the requirements of relevant regulatory requirements.

- A statement of commitment to supporting BC Hydro's role as owner throughout the project, including supporting safety audits, safety inspections, safety reviews, and other safety related requests as needed.
- An Occupational Health & Safety responsibility statement that defines the key Occupational Health & Safety responsibilities of all levels of management and workers. The statement must also define the responsibilities of the Prime Contractor's identified site safety coordinator.
- A standard or rule regarding worker behavioral conduct and the potential consequence for contravention of any safety or health policy, commitment, responsibility or other rule or standards.

5.5.4.1 Hazard Identification and Risk Assessment

The prime contractor shall outline the process for hazard identification, risk assessment and hazard mitigation for all project specific hazards relating to the prime contractor's work activities and work environments.

The hazard identification must include:

- Detailed information on the prime contractor's activities and known hazards related to those activities;
- An assessment of previously identified hazards and control measures, safeguards and/or barriers planned or implemented to address them

The hazard identification and review process shall be completed by qualified professional and reviewed by BC Hydro for completeness.

5.5.4.2 Health and Safety Communication

The prime contractor shall outline the communication process to ensure occupational health and safety programs and safe work plans are clearly and consistently communicated to all employees. The prime contractor's worker health and safety plan shall include:

- A process for submission of a Notice of Project for activities identified under the Occupational Health & Safety regulation. Prime Contractors are responsible for ensuring WorkSafeBC receives the Notice of Project in writing or by fax 24 hours prior to commencement of work. A copy of the NOP will be forwarded to BC Hydro.
- A list of key personnel on-site their role, and how to contact them. At a minimum, this information shall include the person responsible for the work, the person responsible for coordination of safety, the person responsible for emergency response, and first aid attendants.
- A requirement for pre-job and tail board meetings that provide detail of particular jobs, the hazards associated with them, safe work plans, and any other relevant safety messaging pertinent to the job. These meetings shall be conducted at least at the commencement of each shift before work commences, and during the course of the work whenever new hazards are identified or existing work plans change

5.5.4.3 Safe Work Practices

Prime Contractors shall, as a minimum, develop safe work practices for:

- All high hazard and or non-routine work activities and work environments.
- All work involving exposure to occupational hygiene hazards (asbestos, silica, lead etc.)

5.5.4.4 Safety Equipment

Prime Contractors shall provide, maintain and require the use of personal protective equipment based on the hazards of the worksite and the work.

Prime Contractors shall:

- Identify all personal protective equipment required.
- Communicate the requirements for personal protective equipment to the workforce.
- Ensure personal protective equipment is maintained in proper working order.
- Ensure that workers are highly visible at all times and work areas.

5.5.4.5 First Aid

A well equipped primary health care facility and staff able to provide first aid and medical aid will be available on site. Prime Contractors' Worker Health and Safety Management Plan shall include a first aid assessment and a listing of first aid personnel, equipment and supplies that will be provided.

Assessment of on-site first aid requirements shall be in compliance with WorkSafeBC OHS Regulation 3.16.

5.5.4.6 Training and Human Resource Planning

Those responsible for the management, implementation, and operation of any aspect of the Worker Health and Safety Management Plan shall be competent for their role.

Prior to the commencement of work on-site all workers shall:

- Receive training on the worker health and safety management plan and associated work plans.
- Receive an orientation of all known or reasonably foreseeable health and safety hazards of the job site and the work, in compliance with WorkSafeBC Regulations 3.22 to 3.25.

All training must be documented.

5.5.4.7 Monitoring and Reporting

Prime Contractors shall monitor compliance with the Worker Health and Safety Management Plan.

Prime Contractors shall engage a qualified Site Safety Coordinator whose duty shall include:

- Informing employers and workers of any hazards created by the work
- Ensuring that those hazards are addressed throughout the duration of the work activities.
- Producing a site drawing, which must be posted, showing project layout, first aid location, emergency transportation provisions, and the evacuation marshalling station

- Producing a set of construction plans designed to protect the health and safety of workers at the workplace, developed in accordance with the requirements of this Regulation.
- Inspecting the worksite to ensure conditions and plans are safe.
- Producing monthly reports for BC Hydro outlining the safety management related activities, including leading and lagging safety performance indicators.

Prime Contractors Worker Health and Safety Management Plan shall include a program for reporting an investigation of all accidents, near misses, and the actions taken to prevent recurrence.

The contractor shall provide monthly monitoring reports.

6.0 Qualified Environmental Professionals

The CEMP was prepared by the following Qualified Environmental Professional:

Al Strang, P. Eng., BC Hydro

Appendix A. **Public Activities And Risks**

This appendix lists the public safety risks and associated activities as a result of construction activities that BC Hydro has identified to date.

Public Activities and Risks

Location	Time of year	Exposure	Activity	Injury
Dam Site	Summer	On Foot	Hiking	Struck by equipment Struck by materials
			Climbing	Falls from height
			Sight seeing	Struck by equipment Struck by materials
			Fishing from shore	Struck by equipment Struck by materials Drowning
			Plant gathering	Struck by equipment Struck by materials
Dam Site	Summer	On/in vehicle	Sightseeing from a vehicle	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
			ATV use	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
			4X4 use	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
			Bicycle riding	Collision with vehicle Collision with equipment Struck by equipment

				Struck by materials
Dam Site	Summer	On/in vehicle	Dirt bike use	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
Dam Site	Summer	On/in boat	Fishing or sightseeing	Boat collision Struck by materials Swept into diversion tunnel
Dam Site	Winter	On foot	Snowshoeing	Struck by equipment Struck by materials
			Cross-country skiing	Struck by equipment Struck by materials
			Trapping	Struck by equipment Struck by materials
Dam Site	Winter	On/in vehicle	Snowmobiling	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
			Hunting from a vehicle	Collision with vehicle Collision with equipment Struck by equipment Struck by materials

Location	Time of year	Exposure	Activity	Injury
Reservoir Clearing Site	Summer	On Foot	Hiking	Struck by logging equipment Struck by falling timber
			Climbing	Falls from height Struck by logging equipment Struck by falling timber
			Sight seeing	Struck by logging equipment Struck by falling timber
			Fishing from shore	Struck by logging equipment Struck by falling timber Drowning
Reservoir Clearing Site	Summer	On/in vehicle	Site seeing from a vehicle	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			ATV use	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
Reservoir Clearing Site	Summer	On/in vehicle	4X4 use, bicycle riding, dirt bike riding, horseback riding	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			Operation of farm machinery	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber

			Recreational camping	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
Reservoir Clearing Site	Summer	On/in boat	Fishing or sightseeing	Struck by falling timber Damage to boat by debris
Reservoir Clearing Site	Winter	On foot	Snowshoeing	Struck by logging equipment Struck by falling timber
			Cross-country skiing	Struck by logging equipment Struck by falling timber

Location	Time of year	Exposure	Activity	Injury
Reservoir Clearing Site	Summer	On/in vehicle	4X4 use	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			Bicycle riding	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			Dirt bike use	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
Reservoir Clearing Site	Summer	On/in boat	Fishing or sightseeing	Struck by falling timber
Reservoir Clearing Site	Winter	On foot	Snowshoeing	Struck by logging equipment Struck by falling timber
			Cross-country skiing	Struck by logging equipment Struck by falling timber
Reservoir Clearing Site	Winter	On/in vehicle	Snowmobiling	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			Hunting from a vehicle	Collision with vehicle Collision with equipment Struck by equipment Struck by materials

Transmission Line Construction Site	Summer	On Foot	Hiking	Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
			Climbing	Falls from height Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
			Site seeing	Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning

Location	**Time of year**	**Exposure**	**Activity**	**Injury**
Reservoir Clearing Site	Winter	On/in vehicle	Snowmobiling	Collision with vehicle Collision with logging equipment Struck by logging equipment Struck by falling timber
			Hunting from a vehicle	Collision with vehicle Collision with equipment Struck by equipment Struck by materials
Transmission Line Construction Site	Summer	On Foot	Hiking	Struck by logging and clearing equipment Exposure to electrical transmission structures

				Exposed to fire when slash burning
			Climbing	Falls from height Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
			Sight seeing	Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
Transmission Line Construction Site	Summer	On/in vehicle	Sight seeing from a vehicle	Collision with vehicle Collision with logging and clearing equipment Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
			ATV use	Collision with vehicle Collision with logging and clearing equipment Struck by logging and clearing equipment Exposure to electrical transmission structures Exposed to fire when slash burning
			4X4 use	Collision with vehicle Collision with logging and clearing equipment Struck by logging and clearing

				equipment Exposure to electrical transmission structures Exposed to fire when slash burning

SITE C CLEAN ENERGY PROJECT

Appendix B – Traffic Monitoring and Mitigation Plan – Fort St. John and North Bank Area Roads

Site C Clean Energy Project

Revision 1: June 5, 2015

BC hydro FOR GENERATIONS

Table of Contents

1.0 Introduction

The Site C Clean Energy Project (Site C or the Project) is a proposed third dam and hydroelectric generating station on the Peace River in northeast B.C. The proposed Site C Project is located approximately seven kilometres from the City of Fort St. John (the City). Construction of the dam would generate an increase in traffic volumes on roadways in and surrounding the City during the construction period, and to a lesser extent during the dam operating period, resulting from worker, equipment and material movements.

As part of the Site C Clean Energy Project's Environmental Impact Statement (EIS), BC Hydro studied the potential effects that an increase in vehicle traffic in the Peace River Regional District (PRRD) would have on future traffic operations and road safety. BC Hydro, the British Columbia Ministry of Transportation and Infrastructure (MOTI), and the City of Fort St. John have agreed that a Traffic Monitoring and Mitigation Plan (the TMMP) should be developed with regard to traffic operations and road safety for implementation during the term of construction of the Project. Accordingly, BC Hydro studied traffic operations near the proposed dam site and in the City of Fort St. John, along and north of Highway 97, to help with developing the TMMP.

The TMMP includes the traffic volume and road safety monitoring activities that would take place leading up to and during Project construction. This TMMP will be separate from the Traffic Management Plan described in EIS section 35.2.1.4 which set out the requirement for development and implementation of traffic management plans under relevant construction contractors. The relevant construction contractors working on the Project would be responsible for preparing and implementing the plans. This TMMP may be amended from time to time in response to monitoring and/or mitigation results, and as construction contractors' traffic management plans are developed and implemented.

This TMMP includes MOTI roads in the PRRD, in the vicinity of the dam site on the north bank, and the City of Fort St. John's roads. Another Traffic Management Plan (TMP) will incorporate and address roads elsewhere in the PRRD that would accommodate construction Project traffic.

The effect of BC Hydro operations on traffic in and around the PRRD and Fort St. John is expected to be negligible, and BC Hydro will not monitor road safety post-construction of the Project.

BC Hydro has committed to monitoring other aspects of the physical and social environment that would be influenced by road use, including pavement condition, dust and noise, for example. Monitoring these aspects is beyond the scope of this TMMP and will be outlined in separate plans. Implementation of this TMMP would be subject to the Project receiving environmental certification and other regulatory permits and approvals before it can proceed to construction.

2.0 Background

As part of the Project's Environmental Impact Statement, BC Hydro prepared the Project Traffic Analysis 2013[1] that studied traffic volumes and road safety on highways, roads and intersections within the PRRD. The analysis included roads on the north bank of the Peace River and Highway 97 including portions of the highway within the municipal boundaries, but did not include roads within the City north of Highway 97.

As a result of consultation with the City, additional traffic data collection and analysis commenced in June of 2013 to study traffic operations at intersections in the City, generally north of Highway 97. This data and analysis is documented in the Traffic Report – Fort St. John 2013[2]. Additional road safety data collection and analysis was also completed[3].

The results of this work shaped the TMMP, identifying those roads and intersections where existing traffic operations and road safety are a concern, and where traffic operations and road safety may be influenced by Project traffic.

[1] Site C Clean Energy Project, Environmental Impact Statement, Volume 4, Appendix B: Project Traffic Analysis, Amended July 2013

[2] Nova Trans Engineering Inc. 2013. Site C Clean Energy Project, Traffic Report – Fort St. John, Prepared for BC Hydro by NovaTrans Engineering Inc., December 2013

[3] De Leur Consulting. 2014. Traffic Monitoring and Mitigation Plan (TMMP) for Fort St. John, Road Safety Component, Site C Clean Energy Project.

3.0 Definitions

Intersection: includes signalised and unsignalised intersections in the PRRD and Fort St. John.

Collision Rate: for a roadway section, it is defined as the number of vehicle collisions per million vehicle kilometres or, at an intersection, the number of vehicle collisions per million entering vehicles.

Collision Severity Index: represents a measure of collision severity levels and is defined as the weighted sum of fatal, injury (together, casualties) and property-damage-only collisions.

Critical Collision Rate: a function of the average collision rate and traffic exposure, and is based on the average collision rate for similar facilities. The critical rate is a commonly used statistical technique employed by highway agencies to identify hazardous locations.

Level of Service (LOS): a quality measure describing operating conditions within a traffic stream, generally in terms of speed and travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience. LOS A, represents little delay to vehicles and LOS F represents much delay. As a rule, LOS E and F indicate congested operations and, typically, a road authority would not consider improving an existing condition until the LOS erodes to E or F, indicating that a facility is at or over capacity.

Mitigation: the process of improving a traffic condition or level of safety in response to an anticipated or realized traffic operation or safety concern, which would be limited to the design or plan to implement an improvement or which may involve the construction of an improvement. The improvement may be of a temporary nature or permanent and may include signal timing or phasing changes, or additional capacity through construction of additional lanes.

Monitoring: the process of counting traffic by either automated or manual means, analysing the traffic count data in terms of determining level of service, vehicle delays, and/or queue lengths, and which may include forecasting traffic into the future using growth rates developed by BC Hydro in collaboration with MOTI, the PRRD and the City of Fort St. John agree. Monitoring also involves the assessment of safety performance by analyzing collision data, comparing the level of safety against safety performance benchmarks, and predicting future safety performance based on forecasted traffic volumes and design features / characteristics of the infrastructure.

Peak Year Traffic: The sum of (i) vehicle traffic contributed by background (without Project) traffic and (ii) Project-generated traffic, where Project-generated traffic is taken to be the greatest number of vehicles contributed by each Project component (workforce, bulk materials movement, materials and equipment, clearing, transmission lines, Highway 29 realignment and Hudson's Hope berm construction) for the peak quarter of the peak year for that particular component. Since the workforce component contributes the greatest to Project-generated traffic in the vicinity of the dam site on the north bank, and the peak workforce year is anticipated to be year 5 of the dam's

construction (or 2019 assuming a 2014 construction start), year 5 or 2019 is considered the Peak year for traffic in the vicinity of the dam site on the north bank.

Project Traffic: Vehicles using the public road system to transport materials and personnel to and from the dam site from various locations.

Queue: A line of vehicles, bicycles, or persons waiting to be served by the system in which the flow rate from the front of the queue determines the average speed within the queue.[4]

Traffic: vehicle traffic, pedestrian traffic and bicycle traffic, further divided into either background traffic which exists today or is forecast into the future without the Project, and Project traffic which would be generated as a result of the Project.

Vehicle Delay: The additional travel time experienced by a driver, passenger, or pedestrian compared to travel time under free flow conditions.

[4] Highway Capacity Manual, Transportation Research Board, National Research Council, 2000

4.0 Monitoring

4.1 Traffic Performance

4.1.1 Traffic Performance Assessment - Pre-Construction

As part of the Site C Clean Energy Project's Environmental Impact Statement (EIS), BC Hydro studied the potential effects that an increase in vehicle traffic in the PRRD would have on future traffic operations and road safety. Potential effects on traffic operations were examined along Highway 97 through the City and on some roads in the PRRD south of the City. The conclusions from that assessment, reported in the Project Traffic Analysis 2013, are that some existing intersections on Highway 97 through the City and on roads south of Highway 97 would see a one-level decrease in performance (Level of Service, or LOS) for some movements, i.e., from LOS A without Project traffic to LOS B with Project traffic added, or from B to C.

Subsequently, in developing the TMMP, traffic operations on the local Fort St. John road network were assessed. BC Hydro collected traffic volumes in the City from a number of sources. Traffic data collected by MOTI and originally collected by BC Hydro in 2011 was used for Highway 97 intersections in the City. This was supplemented with data collected by BC Hydro in June 2013 for Highway 97 intersections and for intersections within the City and the PRRD.

Manual intersection counts were taken in June 2013 at the locations shown with blue dots in Figure 4.1. These counts were taken on weekdays between 0600 hours and 0900 hours and between 1500 hours and 1800 hours. In addition, a mid-day weekday count (1100 hours to 1300 hours) was taken at the intersection of 100th Avenue and 100th Street.

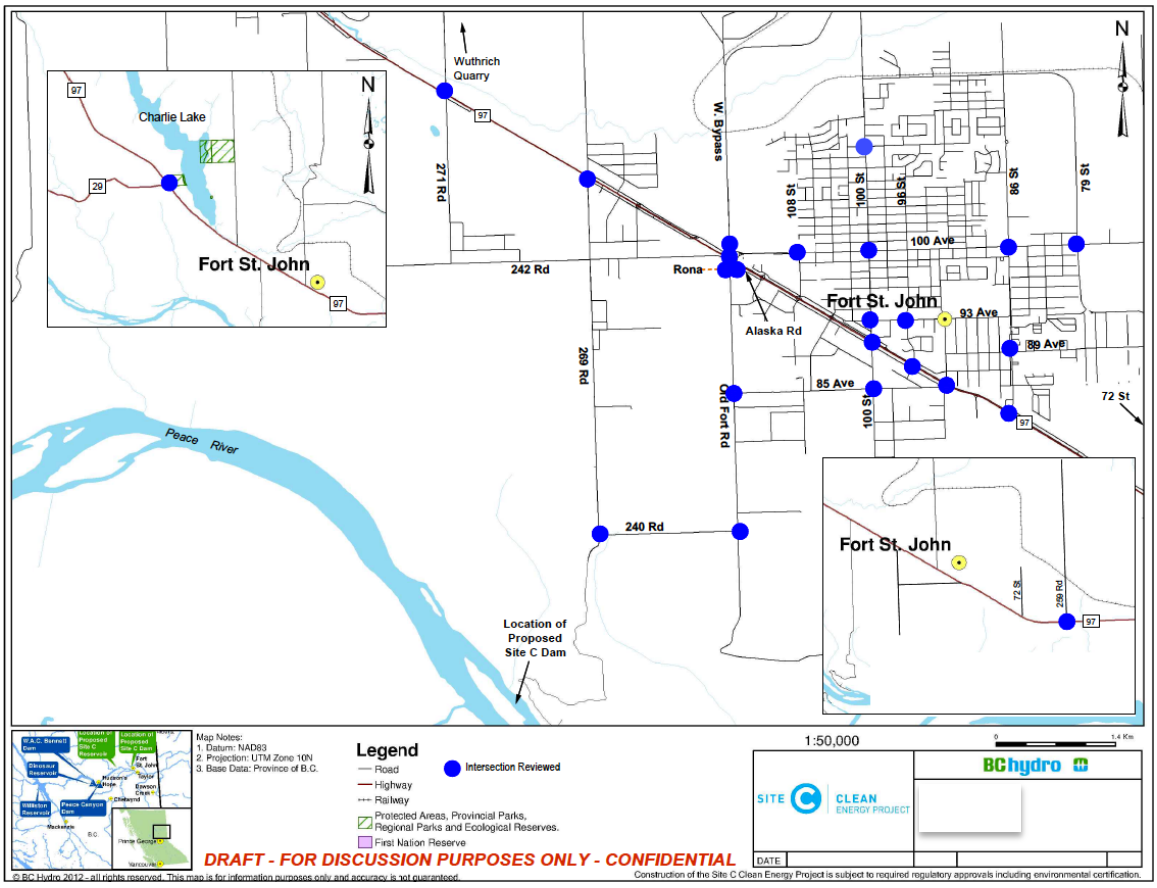

Figure 4.1 - June 2013 Traffic Volume Count Locations

These traffic volumes were factored up to the anticipated peak year of construction, 2019, to which estimated Project traffic was added. BC Hydro determined intersection levels of service in the existing (2013) and peak (2019) years, the latter with and without the Project, to identify intersections where traffic performance is projected to deteriorate with the Project traffic added.

The results of this traffic work are reported in the document Traffic Report – Fort St. John 2013.

In brief, the Traffic Report – Fort St. John 2013 concluded that there are intersections within Fort St. John and in the PRRD south of Fort St. John where some movements are currently operating at level of service D and E. However, it is presently estimated that, while the addition of Project traffic may exacerbate traffic operations in the peak year of Project construction, the additional Project traffic would not, by itself, trigger any mitigation. This is discussed further in Section 5.1.

4.1.2 Traffic Performance Monitoring - Construction Phase

As part of the traffic monitoring program, traffic volumes at defined intersections would be monitored at regular periods throughout Project construction. The frequency of monitoring will be implemented regularly as proposed below and in consideration of input during construction from MOTI, the PRRD and the City of Fort St. John, and in consideration of the Project contractors' construction schedules and activities to anticipate potential Project traffic peaks, including the nature of Project traffic at defined monitoring locations. More frequent counts than those proposed would be undertaken if required based on review of the annual or interim data reports, anticipated or realised traffic peaks, or in response to stakeholder concerns.

BC Hydro would implement the monitoring, using manual or automated means: manual counts (traditional on-site counts, or video / webcam-observed counts) or automated counts (in-pavement detection, or pressure hose).

Traffic counts are proposed for the following locations:

1. Dam Site Entrance: link count at the main Project entrance to the dam site, to define the largest daily volume of Project traffic;
2. Old Fort at 85th Avenue: turning movement count at the intersection of Old Fort Road and 85th Avenue, to understand the split in traffic choosing to travel north versus east;
3. Highway 97 Intersections: turning movement count at four Highway 97 intersections (Old Fort Road, 100th Street, 85th Avenue, 86th Street) where Project traffic may access or cross Highway 97; and
4. 85th Avenue at 100th Street: turning movement count at 85th Avenue and 100th Street, to understand the split of traffic proceeding into Fort St. John via 100th Street and that continuing east.
5. 100th Avenue at West Bypass Road: turning movement count at 100th Avenue and West Bypass Road to evaluate changes in traffic demand and patterns at this location.

It is noted that the intersections of Highway 97 and 86th Street and 100th Avenue and West Bypass Road intersections shows 2013 LOS of E/F and D respectively. BC Hydro has not forecast that these routes would be used by Project traffic as they are not on main routes for goods and services transport to the dam sites. As forecast LOS for both intersections will be F, in the future without the Project[5], raw count data will be captured and provided to the City and MOTI as requested by the City, however analysis for these two intersections will not be undertaken by BC Hydro.

[5] Nova Trans Engineering Inc. 2013. Site C Clean Energy Project, Traffic Report – Fort St. John, Prepared for BC Hydro by NovaTrans Engineering Inc., December 2013

Dam Site Entrance link count:

The link count at the main dam site entrance is proposed to be undertaken quarterly. This would provide the basic trip generation data for the workforce and corresponds to the quarterly estimates undertaken for the Project traffic reports. These counts are proposed to be obtained using a radar traffic recorder to give traffic volumes for a full week.

Turning movement counts:

The turning movement counts will be undertaken annually, except in three instances: the first year, the year prior to the peak year, and in the peak year of construction, when quarterly counts are proposed (to be taken in the AM and PM peak hours). These years of quarterly data will provide seasonal traffic information useful for future construction years.

In addition to collecting traffic volume data, BC Hydro will make and report on site observations where a traffic-operation problem has been identified, as well as periodically during construction.

Once traffic counts are taken and using the traffic models developed prior to Project construction, BC Hydro would determine intersection levels of service using the same methodologies used in pre-construction monitoring work and, for signalised intersections, using actual signal timing plans. These results would be compared against thresholds at which mitigation measures could be considered for implementation. Based on consultation and technical analysis the thresholds would be:

1. left and right turn queue lengths that exceed the available storage; and
2. delays that result in vehicles experiencing a degradation of two levels of service (relative to service levels associated with no Project traffic).

If these thresholds are exceeded, then additional traffic observations or counts would be taken at the location(s) of concern to confirm that the reduction in traffic performance extends is frequent and continuous, and not just periodic.

Intersections that experience traffic performance that encroaches upon or reaches/ exceeds these thresholds would be considered for mitigation.

BC Hydro would make available to MOTI, the PRRD and the City the traffic count data and/or results, so that these entities may review the data directly. In addition, it is anticipated that the City of Fort John may conduct traffic counts at other locations in the City and that this data will be provided to BC Hydro for review.

BC Hydro will monitor traffic operations on other routes and at intersections where, in discussion with MOTI, the PRRD and the City, it is reasonable to deduce that Project traffic may be straining traffic operations at intersections or along routes. In this case, additional traffic count locations may be identified and observed during the construction period to support the review and analysis of project impacts. Additional count locations will be identified in discussion with BC Hydro, MOTI, and the City. Other projects in the

local area or in the Region may be underway concurrent with the Project and so some monitoring activity may be the responsibility of others, including MOTI generally.

4.2 Road Safety

4.2.1 Road Safety Assessment - Pre-Construction

As part of the EIS, BC Hydro studied the potential effects that an increase in vehicle traffic in the PRRD would have on future traffic operations and road safety. Potential effects on road safety were examined along Highway 97 through Fort St. John. The conclusions from that assessment, reported in the Project Traffic Analysis 2013, are that some existing links and intersections would have calculated collision rates and calculated collision severity indices greater than the average collision severity index for the northern region and greater than the critical collision rate. The potential increase in the number of collisions per year on Highway 97 through the City was estimated to increase by only 0.1% between 2014 and 2022.

In developing the TMMP, road safety on roads in the PRRD south of the City was assessed. BC Hydro collected ICBC's claims-based collision data from 2008 through 2012 to assess the safety performance at intersections in the PRRD south of and within the City. These intersections are shown with red dots in Figure 4.2. Intersection collisions were assessed since this is where the majority of collisions occur within a municipality. Links in the road network (i.e., between intersections) were not assessed.

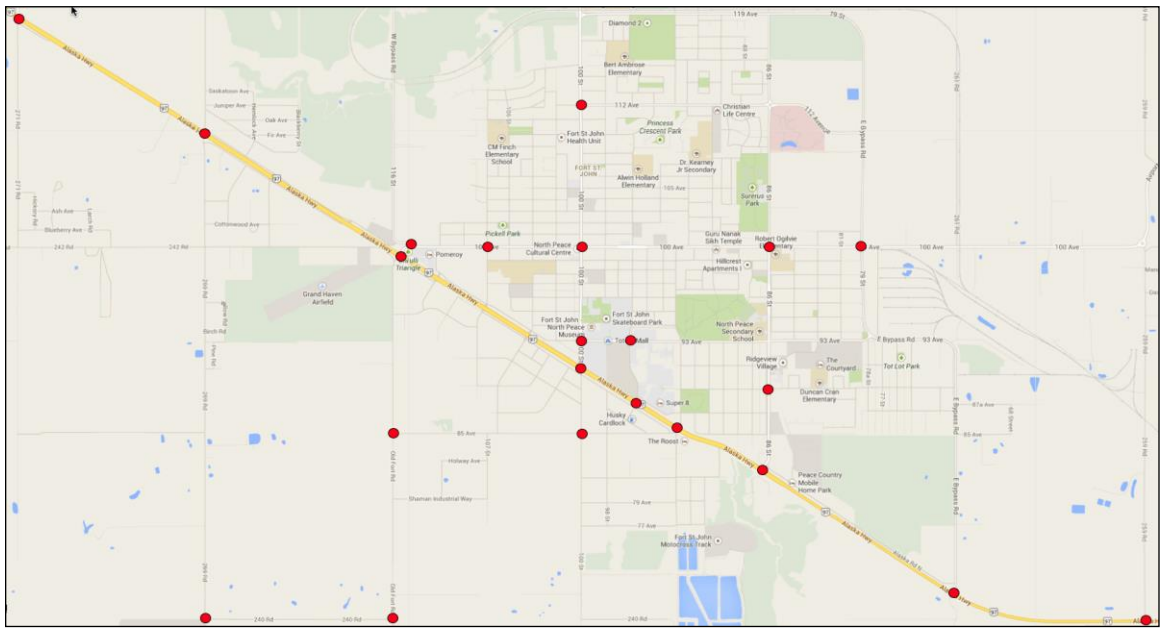

Figure 4.2 – Safety Monitoring Locations

Road safety performance for 2013 was estimated using collision prediction models, and then calibrated against the ICBC collision data. Road safety performance for 2019 with

and without Project traffic was then estimated using the same collision predictions models and the calibration factor.

In brief, the results of that road safety work concluded that, of the intersections assessed, five[6] have collision rates that presently exceed the average collision rate for similar intersections, and nine[7] have collision severity indices that presently exceed average collision severity indices for similar intersections. Furthermore, with the addition of Project traffic during the peak year of Project construction, most of the intersections are predicted to experience a less than 10% increase in annual collision frequency. However, assuming that no changes / improvements to infrastructure occur, the intersections of 100th Street and 85th Avenue, 85th Avenue and Old Fort Road, and 240 Road and 269 Road are predicted to experience an increase in annual collision frequency of greater than 10% with the addition of Project traffic in the peak construction year. This is discussed further in Section 5.2.

4.2.2 Road Safety Monitoring - Construction Phase

ICBC claims-based collision data will be used to undertake on-going monitoring of the locations to be included in the monitoring plan (note that the availability of the historical collision data is typically several months behind the current date). Police reported collision data for roadways outside of the municipal boundary (i.e., intersections along and south of Highway 97) would be obtained to understand the difference between the claims-based collision data and police reported collision data and the impact on reported safety performance. The police reported collision data would allow BC Hydro to understand the collision causation and to identify collision patterns and trends.

Monitoring will involve extracting the collision data for each location and comparing the number of collisions with previous years' collision totals. The frequency of safety monitoring should be linked to the level of construction activity and traffic, such that the safety assessment should be conducted more often at times when the construction activity / traffic is high and less often when the construction activity and traffic is low. For example, during peak construction / traffic periods, the safety assessment could be completed at three month intervals, but when the level of construction and traffic reduces, it may be more appropriate to complete the safety assessment on an annual basis.

The outcome of this work would be to identify and confirm locations that experience poor safety performance (i.e., 'hot-spots'). Because of the rare and random nature of

[6] 100th Avenue and 100th Street, 100th Avenue and Highway 97, 100th Street and Highway 97, 86th Street and 89th Avenue, and 240 Road and 269 Road

[7] 100th Avenue and 79th Street, 100th Avenue and 86th Street, 100th Street and 85th Avenue, 86th Street and 89th Avenue, 93rd Avenue and 96th Street, 96th Street and Highway 97, Highway 97 and 269 Road, 240 Road and 269 Road, and Highway 97 and 259 Road

collisions, confidence in identifying 'hot spots' may be limited in the short term (i.e., shortly after Project construction has started), but confidence will increase over time. Locations of concern can be reviewed and improvements can be planned based on discussion and agreement between BC Hydro, MOTI, the PRRD and the City. In addition, discussions would take place with contractors to alert them of any growing road-safety concerns, and the need for contractors to bring such concerns to the attention of their driving-workforce.

In addition, BC Hydro will explore opportunities to work with the RCMP to monitor collision occurrences at intersections which will be monitored as part of the TMMP.

5.0 Mitigation

5.1 Traffic

5.1.1 Traffic Performance – Construction Phase

From the results of the pre-construction traffic monitoring work cited in section 4.1.1, there are no intersections where Project traffic alone is predicted to cause traffic operations to change to the point that mitigation would be warranted. Details of this work are summarised in the report Traffic Report – Fort St. John 2013. There are, however, several intersections where existing traffic operations or future traffic operations (without the Project) are predicted to change to the point that one or more of the aforementioned thresholds (queue length and at least a two level change in Level of Service) are breached. These intersections, as noted in the Traffic Report – Fort St. John 2013, are:

- 100th Avenue / West Bypass Road;
- 100th Street / 93rd Avenue;
- Highway 97 / 100th Street;
- Highway 97 / 86th Street; and
- Highway 97 / Old Fort Road.

Deterioration of intersection levels of service, to thresholds determined by BC Hydro in collaboration with MOTI, the PRRD and the City that can reasonably be identified as associated with Project traffic, and which experience lower levels of traffic performance over a sustained period, would be remedied through implementation of mutually agreeable improvements. As reported in Section 4.1.2, for intersections, these thresholds are:

- left and right turn queue lengths that regularly exceed the available storage; and
- delays that result in vehicles experiencing a degradation of two levels of service (relative to service levels associated with no Site C-generated traffic).

Mitigation that could be considered to remedy these reductions in level of service include:

- changing traffic control and/or intersection configuration;
- re-timing traffic signals;
- adding phases to existing traffic signals;
- lengthening intersection auxiliary lanes; and/or
- installing guide or information signs, or distributing information throughout the community and Site C workforce encouraging alternative travel routes.

As BC Hydro is not the agency responsible for public roads and intersection performance, it is anticipated that MOTI, the PRRD or the City may decide to address intersection performance based on current or future traffic conditions, regardless of the Project traffic. For those intersections predicted to experience deterioration in

performance, even without the Project, possible measures that may be considered are discussed in the Traffic Report as follows:[8]

- 100th Avenue / Western Bypass Road; Reconfigure to protected-T or signalize
- 100th Street / 93rd Avenue; Re-time traffic signal
- Highway 97 / 100th Street; Re-direct traffic to alternative intersections
- Highway 97 / 86th Street; Signalize
- Highway 97 / Old Fort Road; Re-time traffic signal

As Project construction unfolds, and with the benefit of the traffic monitoring program noted in Section 4, the traffic performance observed during construction may differ from that predicted in pre-construction projections to the extent that Project traffic triggers an improvement at one or more intersections. When that happens, or if BC Hydro anticipates that it will happen based on an upward trend in Project traffic growth, appropriate analysis (including additional traffic counts) and mitigation will be discussed with MOTI, the PRRD and the City, and other stakeholders.

Initially, at signalised intersections, traffic signal timing plans may need to be adjusted to reflect changes in traffic volumes on arriving legs. Such operations would be identified through the monitoring work, and then BC Hydro would work with MOTI and the City to determine if and when the traffic signals should be re-timed.

Through their traffic management plans, contractors would be responsible for managing one-off or short-term traffic interruptions resulting from a specific contractor operation or operations. Such operations may require alternating single lane closures, deploying traffic control personnel, and/or informing the public through local, regional and social media. BC Hydro and its contractors will work together to inform the public in a timely manner of such traffic interruptions.

5.1.2 Post-Construction

BC Hydro will work with the road authority to determine whether or not any mitigation should be removed post-construction and to determine which party will be responsible for re-instating the pre-mitigation condition at BC Hydro's expense. For example, traffic signals may have to be re-timed. Physical improvements or changes made to road infrastructure would remain in place.

5.2 Road Safety – Construction Phase

Based on anticipated Project traffic and routes, current road conditions, and results of technical studies, BC Hydro has proposed, in the EIS[9], to undertaking road safety

[8] Nova Trans Engineering Inc. 2013. Site C Clean Energy Project, Traffic Report – Fort St. John, Prepared for BC Hydro by NovaTrans Engineering Inc., December 2013

improvements on several North Bank roads, should the Project receive environmental certification and proceed to construction. These improvements include limited extents of shoulder widening on 271 Road, Old Fort Road, 240 Road and 269 Road (south of 240 Road) as well as a realignment of the 'switchback' on Old Fort Road. In addition, illumination would be added at the intersections of Old Fort Road and 85th Avenue, Old Fort Road and 240 Road, and Old Fort Road at the Mica Sand and Gravel entrance.

As a result of the road safety analyses documented in the report Traffic Monitoring and Mitigation Plan (TMMP) (de Leur Consulting, 2014), BC Hydro proposes to complete an in-service road safety audit at the intersections of 85th Avenue and Old Fort Road, 240 Road and 269 Road and 85th Avenue and 100th Street. BC Hydro would discuss the results of the audit with the appropriate road authority (MOTI or the City).

Additional mitigation and improvements, with the view to improving road safety, would be implemented by BC Hydro if the road safety performance monitoring at a location reaches a level when BC Hydro, MOTI, the PRRD and/or the City determine that improvements are necessary. This deterioration in safety performance must be due, substantively, to Project traffic. Other road authorities may also, independent of BC Hydro, undertake road upgrades on monitored routes based on their own planning and requirements.

In determining mitigation, the first step would be for BC Hydro to assess the 'hot-spot' location based on the design and operational characteristics of the site, and to determine the features of the site that may contribute to the deterioration in safety performance. The second step would be for BC Hydro to assess the collision data to identify patterns and trends in the data, such as collision type, temporal patterns, etc. Finally, with input from MOTI, the PRRD, the City, the RCMP and/or other stakeholders, BC Hydro may take the lead in developing improvement options to mitigate safety deficiencies. Alternatively, MOTI, the PRRD or the City may be the lead agency. The types of safety-related mitigation plans / improvement implemented due to Project traffic are likely to be modest, as Project traffic will be temporary, such as the following types of safety improvements:

- add a dedicated left-turn phase at a signalized intersection;
- add a left-turn lane at an intersection;
- improve lighting;
- speed mitigation techniques;
- add signing and/or pavement markings; and/or
- pedestrian crossing facilities.

Depending on the results of the road safety performance monitoring work, improvements could be planned and implemented responding to developing or expected safety concerns. Alternatively, BC Hydro would lead development and implementation of safety

[9] Site C Clean Energy Project, Environmental Impact Statement, Section 31: Transportation. Amended July 2013

improvements after collisions occurred, leading to greater confidence in the improvement's effectiveness.

In advance of implementing any identified safety mitigation, BC Hydro would work with MOTI, the PRRD and the City to collaborate on improvement plans and assign level of responsibility between parties.

6.0 Resources and Organisation

It is proposed that BC Hydro would identify an individual who would be responsible for managing the TMMP and for overseeing the monitoring and mitigation components identified in the TMMP. This individual – a TMMP Coordinator – would be a BC Hydro representative and would provide recommendations to senior Project management for the type and timing of warranted mitigation measures.

The TMMP Coordinator would provide on-going liaison with other BC Hydro personnel, construction contractors, MOTI, the PRRD, and the City during pre-construction and the construction phase of the Project. A Traffic Technical Working Group would be established with representatives appointed by appropriate parties (including MOTI and the City of Fort St. John) to review information as described in the TMMP. The Traffic Technical Working Group would also make recommendations with respect to additional data collection and analysis that may be required beyond what has been specifically identified in the TMMP. Final reports would be provided by BC Hydro to the Fort St. John Community Liaison Committee for review.

Appendix C – Commuter and Carpool Plan

Site C Clean Energy Project

Revision 2: March 22, 2017

Table of Contents

1.0 Introduction

1.1 Objective and Scope

The objective of the commuter and carpool program is to describe the measures that will be used to mitigate the adverse effects of the Project on traffic delays and collision frequency.

The scope of the commuter and carpool program includes the following:

- Develop and implement a commuter and carpool program
- Provide a shuttle service for workers between Chetwynd and the Site C dam site if warranted by demand or restrictions on access for private vehicles to the dam site

1.2 Regulatory Context

Implementation of any worker shuttle services would take into account applicable regulations. The B.C. Occupational Health and Safety Regulation, Part 17 Transportation of Workers describes requirements for transportation vehicles for workers.

The Passenger Transportation Board ("Board") is an independent tribunal in British Columbia established under the *Passenger Transportation Act*. The Board's primary responsibility is to make decisions on applications relating to the licensing of passenger directed vehicles (e.g. taxis, limousines, shuttle vans) and inter-city buses in British Columbia (Passenger Transportation Board 2014).

2.0 Mitigation Measures

2.1 Personal Carpool Resources for Commuters

This section has been developed in accordance with Condition 36 of the Environmental Assessment Certificate: *The EAC Holder must develop and implement a carpool and commuter program as part of the Traffic Management Plan.* BC Hydro will develop an approach as described below and disseminate program information to Project workers. The approach will support both daily commuters and drive-in/drive-out workers (residing in camp). The program will be made available within 90 days of the beginning of Project construction, and will be shut-down when the Project labour force drops below 400 workers at the end of construction.

Personal carpool resources and information are available to the workforce on the Site C public website along with other information regarding working on the Project.

BC Hydro reviewed online carpool sites commonly used in the region or province and has linked to those sites on the Site C public website. The identified sites will be updated as needed based on their continued functionality and applicability for the workforce. Outside websites are preferred bcause they support Project worker access to a larger pool of potential carpool partners.

BC Hydro will periodically review parking arrangements on-site and usage to determine if preferred carpool parking would likely encourage more workers to carpool. Examples of this would be when enough workers were parking in on-site faciliities to make workers park a significant distance from their pick-up location. BC Hydro will implement a preferred carpool

parking program at the on-site parking facilities during periods when it is identified it is likely to encourage more workers to carpool and will post information about that program along with the online carpool sites.

Workers will be reminded that it is not permitted to park on the provincial road system. Carpool participants are responsible for finding legal parking for their vehicles when they are picked up by their carpool group.

2.2 Shuttles

BC Hydro will consult with the City of Fort St. John and Peace River Regional District on proposed routes and schedules for regularly scheduled BC Hydro provided Project shuttle services or connect the municipality with the appropriate contractor for contractor operated shuttle services.

2.2.1 Leisure Shuttle

The leisure shuttle will provide access to locations in and around the City of Fort St. John from worker accommodation. Shuttle stops will be developed in consideration of feedback from the City of Fort St. John. Stop locations will be selected to provide workers convenient access to businesses and facilities such as restaurants, shopping, entertainment and recreation facilities.

The schedule for the leisure shuttle will be adjusted based on worker numbers, shifts, demand and feedback from community entities (e.g. City of Fort St. John, RCMP, local businesses). For example, if a high number of workers in the camp arrive with a personal vehicle, and demand for shuttles is low, shuttle services may be decreased.

When operating, a current shuttle schedule and route map will be available on a Project worker website or the public Site C website. The map will provide information about the businesses and services located near each stop.

2.2.2 Airport Shuttles

The airport shuttle transfer service will move workers to and from the dam site accommodation and the North Peace Regional Airport. The service may consist of multiple types of vehicles over the course of the construction phase based on factors such as demand and schedule. The airport shuttle transport services may include both scheduled and unscheduled transport services and may include both commercial transport providers and transport provided directly by BC Hydro or its contractors.

The providers of the airport shuttle transfer service are subject to the rules of the North Peace Regional Airport for drop-off and pick-up of passengers and parking.

2.3 Airport Charter flight Use

To support the North Peace Regional Airport in understanding how many Project employees come in or out of the airport on charter flights for their turnaround, BC Hydro will require major contractors to report the number of charter flights used for workforce travel, and total number of worker trips on charter flights, landing or taking off from the North Peace Regional Airport.

BC Hydro will provide a report to the North Peace Regional Airport twice yearly with the results of this reporting.

2.4 Commuters from the Chetwynd Area

This section has been developed in accordance with Condition 36 of the Environmental Assessment Certificate: *The EAC Holder will provide a shuttle service for workers between Chetwynd and the Site C dam site if warranted by demand or restrictions on access for private vehicles to the dam site.*

South Bank Access to the Dam Site

Peace River Hydro Partners decided in early 2016 that they will transport a majority of the rock material required from West Pine Quarry to the dam site by rail and based on that decision will not be completing significant infrastructure upgrades to the south bank roads to the dam site. This includes not constructing the Project Access Road.

Because these upgrades will not be completed, the estimated drive times for private vehicles from Chetwynd to either the south bank gate or the north bank gate would be similar, via the Jackfish Plateau PDR roads (1h 45m) or via Highway 97 / Braden Road (1h 50 m) respectively. BC Hydro will not promote private vehicle use of the Jackfish Plateau PDR roads due to the potential for safety conflicts with industrial traffic.

A small, non-winterized parking area near the south bank gate will be available however private, non-work vehicles are prohibited on the south bank internal dam site roads. Workers who desire to commute via Jackfish Lake Road to the south bank gate in private vehicles must make arrangements with their employer for within the dam site travel to their work location. Workers are able to discuss with their employer the availability of dam site camp accommodation to avoid the long daily commute.

Shuttle Service Based on Demand

BC Hydro has required Peace River Hydro Partners, the largest contractor for the Project, to monitor demand for a shuttle from Chetwynd for their employees. BC Hydro will also require this of the Generating Station and Spillways contractor which is anticipated to be the second largest contractor for the Project.

If a shuttle service from the Chetwynd area (to be operated by contractor) is justified based on the information gathered from Peace River Hydro Partners and the Generating Station and Spillways contractor regarding worker demand, it will be implemented as follows:

- Potential shuttle passengers would have demonstrated that carpool or private transportation options are not feasible for them;
- Workers expressing interest in a shuttle would also be encouraged to register and seek personal carpools, as these may offer the most flexible arrangements for their work schedules.
- The shuttle service would serve for turnaround to camp, not for daily commuters
- The shuttle vehicle size would be determined by the number of workers
- Shuttle pick-up locations and adjacent parking areas would be determined in consideration of feedback from Chetwynd and the West Moberly and Saulteau First

Nation communities (e.g. a Chetwynd pick-up location, as well as a pick-up location at Highway 29 / Jackfish Lake Road).

Shuttle Service Based on Restrictions

Based on the Project Access Road not being constructed, it is not anticipated that there will be any Project imposed restrictions for private vehicles accessing the dam site gate on the south bank which would then trigger the need to provide a shuttle service for workers between Chetwynd.

3.0 References

B.C. Occupational Health and Safety Regulation: Part 17 Transportation of Workers. Available at: http://www2.worksafebc.com/publications/ohsregulation/part17.asp. Accessed September 3, 2014.

BC Hydro. 2013a. Site C Clean Energy Project Environmental Impact Statement: Section 31 Transportation. Vancouver, BC.

BC Hydro. 2013b. Site C Clean Energy Project Environmental Impact Statement: Volume 4 Appendix B Project Traffic Analyses. Vancouver, BC.

Passenger Transportation Board. 2014. Introduction to the Passenger Transportation Board. Available at: http://www.ptboard.bc.ca/. Accessed September 3, 2014.