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VIA EMAIL

March 27, 2012

BC HYDRO – DAWSON CREEK/CHETWYND TRANSMISSION PROJECT CPCN EXHIBIT A-25

TO: Ms. Janet Fraser
Chief Regulatory Officer
British Columbia Hydro and Power Authority
(bchydroregulatorygroup@bchydro.com)

Registered Interveners
(BCH-DC/Cat-RI)

Re: British Columbia Hydro and Power Authority
Project No. 3698640/Order G-132-11
Certificate of Public Convenience and Necessity Application
for the Dawson Creek/Chetwynd Area Transmission Project

Request for Reactivation of Hearing Process

By letter dated March 23, 2012, British Columbia Hydro and Power Authority (BC Hydro) requested reactivation of the hearing of this application, and put forward submissions and proposals with regard to how the balance of the hearing should proceed. (Exhibit B-22)

The Commission invites Interveners to provide their comments on the matters addressed in BC Hydro's letter and to the extent there is disagreement with BC Hydro's position, to provide their comments on how to conduct the balance of the hearing. The submissions from Interveners should be filed with the Commission by Tuesday, April 3, 2012.

When responding to BC Hydro's letter please address:

- whether you intend to file intervener evidence;
- whether any issues can be removed from the scope of the hearing as a result of BC Hydro's letter; and
- whether a procedural conference suggested for Monday, April 16, 2012 at 9:00 a.m., addressing specific issues, should be held before a determination is made by the Commission on BC Hydro's reactivation request.

Yours truly,

Alanna Gillis

/yl
Enclosure

BC hydro REGENERATION

Janet Fraser
Chief Regulatory Officer
Phone: 604-623-4046
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bchydroregulatorygroup@bchydro.com

March 23, 2012

Ms. Alanna Gillis
Acting BCUC Secretary
British Columbia Utilities BCUC
Sixth Floor – 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Ms. Gillis:

RE: Project No. 3698640
British Columbia Utilities BCUC (BCUC)
British Columbia Hydro and Power Authority (BC Hydro)
Reactivation Request of the Application (the Application) for a Certificate of Public Convenience and Necessity (CPCN) for the Dawson Creek/Chetwynd Area Transmission Project

On November 23, 2011, BC Hydro requested that the review of the Application be suspended until BC Hydro advises that it is ready to resume the hearing process. On November 30, 2011, the BCUC accepted this request and suspended the process and the regulatory timetable established in Order G-184-11. The BCUC also delayed the consideration of West Moberly First Nation's adjournment application until further notice.

This letter contains BC Hydro's request to reactivate the hearing process and its submissions with respect to the manner in which that reactivation should be structured. These submissions are based in part on evidentiary material not currently on the record of this proceeding. BC Hydro has prepared and attaches direct evidence containing this material.

BC Hydro's request for suspension was based on policy issues raised in the Round 3 IRs in general but with particular focus on the following five areas:

1. Whether rolled in rate principles should apply on the BC Hydro system (for example: CP IR 1.1.1 series; CP IR 1.3.4 series; BCUC IR 3.8 series);

2. Whether distinctions should be made between old and new customers for ratemaking and service level purposes (for example: CP IR 1.5 series; AMPC IR 1.1 series; AMPC IR 1.2 series);

3. Whether postage stamp rates, which have been in effect since BC Hydro was created in 1962, remain appropriate on its system (for example BCUC IR 3.13 series);

4. Whether its N-1 service standard, required pursuant to the MRS standards that were developed pursuant to BCUC Orders G-67-09, G-167-10, G-162-11 and G-175-11 remains the appropriate service standard; and

5. Whether consideration of the DCAT Project requires the BCUC to consider province-wide system planning issues and BC's Energy objectives under the *Clean Energy Act*.

In BC Hydro's view, this CPCN application has to be considered in light of the current tariff which governs BC Hydro's relations with its customers. That is, because, with one exception noted below there is no complaint or BCUC motion seeking to amend the tariff, the policy issues that are raised by the DCAT Project must be considered in the context of the tariff as it is. Any other approach would be entirely speculative and would result in the DCAT Project decision being made in the context of a regulatory environment that does not currently and may never exist.

For this reason, BC Hydro believes that the policy issues raised by the IRs are best informed by an interpretation of its current obligations under the *Utilities Commission Act*, relevant regulations, special directions and BCUC orders and BC Hydro's tariff. Accordingly, this letter will set out BC Hydro's understanding of that environment.

As set out in the Application, the DCAT Project is necessary to improve the quality of service to all customers within the DCAT Project area and to provide service to five major new loads, three of which will be served under Rate Schedule 1823. The DCAT Project is thus a part of BC Hydro's plan to return the quality of service to the standard required under the MRS standard adopted by the BCUC in the face of recent and anticipated load growth in the area. The terms and conditions on which service is provided under Rate Schedule 1823 are set out in Tariff Supplements 5 and 6 (TS 5 and TS 6, respectively). In particular, TS 6 determines the extent to which new costs are rolled into BC Hydro's existing rate base and the extent to which new customers must assume direct responsibility for extension costs before they are entitled to receive electricity on the same basis as existing customers under the rate schedule applicable to them. BC Hydro has also proposed amendments to the terms and conditions applicable to large customers taking electricity at distribution voltages to bring their cost responsibility into alignment with transmission voltage customers under TS 6. This is the only revision to BC Hydro's tariff that is before the BCUC.

The five customers are noteworthy primarily only because they have requested service at roughly the same time. There are existing customers with the same load profile and energy use as some of the five. There are also existing customers that had a choice of

employing their own gas in their operation but have chosen electric service instead. One of the five customers has always been captive to electric service in that it has no option for its energy needs and will not be able to expand its facility without electric service. Others of the five have already made irrevocable decisions by expending capital to configure their facilities to take electricity instead of relying on natural gas compression. All five customers have expressed their desire to receive electricity from BC Hydro rather than generating their own or substituting an alternative fuel. The character of their reliance on BC Hydro is indistinguishable from many other BC Hydro loads.

Against that backdrop, this letter will set out BC Hydro's interpretation of TS 6 as it relates to the first two policy issues raised by the Round 3 IRs.

The third policy issue regarding postage stamp rates and whether they remain appropriate on BC Hydro's system is fundamental to the way in which BC Hydro has provided service to its customers over the years. The historical use of postage stamp rates by BC Hydro, and the BCUC's approach to suggestions that alternate rate designs be employed, is also described below. A related issue is whether rates should be affected by the use to which a customer proposes to put the electricity it acquires. This letter will set out BC Hydro's understanding of the approach that has been used by BC Hydro and approved by the BCUC in the past.

The fourth issue in connection with the N-1 service standard requires consideration of the current MRS standard as adopted by the BCUC and how it applies in the context of DCAT Project service area. Finally, the fifth issue involves consideration of the extent to which this proceeding is the place to determine the role of BC's energy objectives set out in the *Clean Energy Act* in BC Hydro's system planning process. This letter will set out BC Hydro's position relating to the proper forums to consider these issues.

Tariff Supplement No. 6 and the Heritage Contract

BC Hydro's filed tariff for transmission voltage customers is comprised of an Electricity Supply Agreement TS 5 and a Facilities Agreement TS 6.

Appendix 1 to TS 6 (Appendix 1) contains the general tariff provisions assigning costs, responsibilities, and rights between BC Hydro and transmission voltage customers in the context of system reinforcements and extensions. TS 6 was approved in its present form by the BCUC in 1991. The application of TS 6 to new customers in the Dawson Creek area is a key issue in the DCAT Project proceeding.

Under TS 6, new and expanding transmission voltage customers (New Loads) are required to pay for the cost of any dedicated facilities to extend or reinforce the transmission system to serve their new load. New Loads may also be required to contribute to additions and alterations to BC Hydro's existing transmission facilities that are required to serve their load. For very large loads (> 150 MV.A), the incremental cost of generation plant and associated transmission, or transmission lines of 500 kV and

over required to serve the New Load, are also included as system reinforcement costs that must be paid by the customer.

Subsequent to the approval of TS 6 in 1991, the Lieutenant Governor in Council issued Heritage Contract Special Direction No. 2 (2003) (HC2). HC2 is binding on the BCUC and requires that BC Hydro's rates, including terms and conditions, are compatible with the Report and Recommendations made by the BCUC to Cabinet concerning a Heritage Contract for BC Hydro, dated October 17, 2003 (the Heritage Report). Those recommendations make clear that all members of BC Hydro's rate classes, regardless of when they joined the class are entitled to enjoy the benefits of low cost heritage energy. The HC2 also specifies that BC Hydro's tariff must reflect the terms and conditions found in TS 5 and TS 6. BC Hydro interprets TS 5 and TS 6 to treat existing and new customers the same when they bring New Load to the system and thus views these two aspects of the direction provided by the HC2 to be consistent. Conversely, discriminating against New Load in the context of system reinforcements would be inconsistent with the clear requirements of the HC2.

The BCUC has not been called upon to comment or rule on TS 6 or interpretations of it very often. What it has said is generally consistent with the approach described above.

The DCAT Project does not involve a material transmission extension but does require significant transmission system reinforcement. Because each DCAT Project customer's load is under 150 MV.A, system reinforcement will include all required sub-500 kV transmission upgrades beyond the customer's point of interconnection, but will not include any generation capital costs or costs related to 500 kV transmission.

TS 6 provides that BC Hydro is to make a contribution towards the customer's System Reinforcement obligations. That contribution is determined through a formula that considers the net contributions made by the customer to the costs of operating BC Hydro's system in the first year of service to that customer multiplied by approximately 7.4.

In the context of the DCAT Project , the attached supplemental evidence sets out how BC Hydro calculates the offset and how it was applied in the context of the DCAT Project.

With respect to the distribution voltage customers, no such calculation was required in connection with costs on the transmission system. The responsibility of distribution extension customers is currently limited to distribution costs.

BC Hydro acknowledges that during times when the system is in surplus, and incremental generation costs exceed embedded generation costs, New Load, no matter what class or character of customer is responsible for the load, will necessarily put upward pressure on existing rates. Thus, the success of the province in attracting New Load will eventually impose costs on incumbent customers. TS 6 reflects a division of

responsibility for the costs negotiated by BC Hydro with its customers, approved by the BCUC in the filed tariff and confirmed by government under Special Direction HC2.

End Use Rates

BC Hydro's rates and the terms and conditions of service do not distinguish between customers based on the use to which power is put. Developing a rate structure for transmission voltage customers that did discriminate on this basis would be a significant departure for BC Hydro and would require extensive consultation with stakeholders to understand the full implications of doing so. BC Hydro has not undertaken that work in conjunction with this application and does not believe that profound change of this nature should be contemplated in its absence. No party has requested that BC Hydro undertake such work prior to this application.

BC Hydro has not assessed the economic, environmental and social benefits or costs resulting from the proposed activities of the DCAT Project customers except as they relate to the government's energy objectives. Nor has BC Hydro analyzed what factors have influenced those customers' decision to request service from BC Hydro. Similarly, BC Hydro has not focused on the specific milestones each customer will have to meet to reach a final investment decision for its project. Instead, BC Hydro has sought information concerning the timing of those final investment decisions and required a signed facilities agreement and posted security from each customer. As fully described in the attached evidence, BC Hydro believes that it will have commitments in hand by the end of April 2012 from all the new customers that will be served by the DCAT Project.

Postage-Stamp Rates

All BC Hydro's rates within its integrated transmission system have been built on a postage stamp principle with the result that BC Hydro does not distinguish amongst its customers based on location. This policy has been in place since BC Hydro first came under independent regulation by the BCUC in 1980 and neither BC Hydro nor any other party has brought an application to vary that approach. The BCUC has in the past held that the postage stamp approach will remain in effect for BC Hydro's rates until an interested party demonstrates the need for change.[1] BC Hydro has based the DCAT Project Application on the assumption that postage stamp rates remain appropriate in the DCAT Project service area and no intervener nor the BCUC have sought a change in BC Hydro's rate structure that would bring that assumption into question.

The practical consequence of adherence to postage stamp rates will vary with geography, local load characteristics, customer dispersion and rate class, amongst other

1 BC Hydro 2008 Residential Inclining Block Rate Application, Decision dated September 24, 2008, at page 8, Order G-214-08; and FortisBC Inc. 2009 Rate Design and Cost of Service Analysis, Decision dated October 2010, page 69.

things. BC Hydro has not attempted to analyze the implications of this long employed approach against fairness or efficiency principles of rate design for the DCAT Project area or for anywhere else on its system and it would only be appropriate to do so in the context of a focused review of the issue within clear parameters. BC Hydro does not believe there is any principled basis on which to do this in the unique context of the DCAT Project and would be very concerned that unintended consequences might result from doing so on an *ad hoc* basis.

N-1 Operating Criterion

Section 125.2 of the *Utilities Commission Act* obliges the BCUC to adopt mandatory reliability standards (MRS) made by a standard making body, if the BCUC finds that the MRS are in the public interest and are required to maintain or achieve consistency in BC with other jurisdictions that have adopted MRS. Pursuant to section 125.2, the BCUC has adopted the N-1 standard for service on the bulk transmission system, as that standard is defined by the North American Electric Reliability Corporation (NERC) and the Western Electricity Coordinating Council (WECC).

More specifically, WECC Transmission Planning Standard TPL-002-0 was adopted by BCUC Order No. G-67-09 dated June 4, 2009. TPL-002-0 requires that the system remain stable with thermal and voltage limits within acceptable ratings, with no loss of demand or curtailment of firm transfers, and no cascading outages, when an event on the transmission system results in the loss of a single element.

Similarly, Rule 6 of adopted standard TOP-002-2 provides that:

> "Each Balancing Authority and Transmission Operator shall plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, subregional, and local reliability requirements."

These requirements apply to the "bulk power system" which is defined to mean[2]:

> "(a) electrical generation facilities and transmission facilities, including interconnections with neighbouring systems, that are generally operated at voltages of 100 kilovolts or greater, and
>
> (b) transmission facilities that are generally operated at voltages of less than 100 kilovolts and that are, on their own or in combination with other generation, transmission or distribution facilities, material to reliability but

[2] Mandatory Reliability Standards Regulation, BC Reg. 32/2009 pursuant to *Utilities Commission Act.*

> excludes radial transmission facilities, regardless of voltage, serving only end-users of electricity with one transmission service."

BC Hydro uses modeling tools to assess the impact of single element outages under present and future loading conditions. Where single element outages show impacts that do not meet the N-1 planning standard, BC Hydro is required by the standard to have written plans that show how the standard will be met including a schedule for implementation of those plans, and a discussion of the expected in-service dates of facilities with consideration of implementation lead times. In some situations, a capital project like the DCAT Project is required to comply with these requirements.

The BCUC has been clear that achieving the standard required under MRS is not optional. Indeed the BCUC is currently proposing a process that will determine the penalties that will be applied to transmission providers such as BC Hydro for failure to meet those standards. As the BCUC has put it in its draft policy in that respect:

> The Compliance Monitoring Program is based on mandatory rather than voluntary compliance with adopted reliability standards. Enforcement of compliance may ultimately require the levying of appropriate penalties, in the form of fines and other sanctions, for violations of adopted reliability standards. At this time, the BCUC does not have authority to levy administrative penalties. If circumstances warrant, the BCUC can bring a MRS violation before the courts, and seek to have an Applicable Entity convicted of an offence under the Act. (See BCUC Letter dated October 28, 2011 Re: British Columbia's Mandatory Reliability Standards (MRS) Determination of Reference Amount for a Confirmed Violation of MRS)

The Government has recently introduced a bill in the legislature which provides the BCUC the power to levy administrative penalties.

In summary, the evidence filed with this letter makes clear that the DCAT Project is a reinforcement of BC Hydro's integrated transmission system. In no sense is service to the DCAT Project area achieved now through radial facilities and the MRS would not permit it to be in future. Nor does the tariff provide any basis for distinguishing rates between customers entitled to N-1 quality service and N-0 service. Rather, the only grounds for distinguishing amongst customers are found in the provisions in Appendix 1 to TS 6 governing the allocation of system reinforcement and basic extension costs.

BC Energy Objectives

Section 2.6.1 of the Application lists those of the Province's energy objectives that are relevant to the DCAT Project. Because the DCAT Project has no material impact on or is consistent with all the other objectives contained in section 2 of CEA and conflicts with none, BC Hydro did not find it necessary to prioritize the objectives in evaluating the DCAT Project. While BC Hydro accepts that the impact of the DCAT Project on these

objectives is relevant to the BCUC's determination of the public convenience and necessity, the *Clean Energy Act* makes clear that BC Hydro's resource planning is to be reviewed through an alternative process. BC Hydro respectfully submits that the clear legislative intent expressed in the *Clean Energy Act* should not be frustrated by converting the DCAT Project proceeding into a general resource planning exercise.

In particular, BC Hydro will be filing its IRP for approval with the Lieutenant Governor in Council by the end of 2012 and that will provide government with the opportunity to either confirm BC Hydro's approach or provide guidance on what the approach should be. The clear intent of the CEA is to reserve those policy choices to government and no purpose would be served by the BCUC conducting an expensive process to consider them just as they are about to be considered by government.

BC Hydro acknowledges that various parties and the BCUC's panel and staff have inquired whether proceeding with the DCAT Project is consistent with policy objective 2(f). That objective requires BC Hydro to seek to maintain its rates amongst the most competitive of rates charged by public utilities in North America. BC Hydro does not believe that undertaking the DCAT Project as proposed instead of meeting its service obligation by some other means will jeopardize its ability to meet this objective.

Scope of the DCAT Project Proceeding

BC Hydro recognizes that each of the policies discussed above have profound implications for the way in which BC Hydro treats its customers and for the manner in which economic development in the province will occur. These policies have been central in the history of electrification of British Columbia in the past and are likely to remain so in the future. Debate with respect to these policies at the instance of utilities such as BC Hydro, its customers, or indeed, at BCUC or government instance, may well be appropriate from time to time and, like any policy, there may be times when change is required. However, these policies ought not to change without full deliberation and full process dedicated to ensure any change of such fundamental concepts is in the public interest. BC Hydro would not seek to undertake change of this magnitude without having fully canvassed its stakeholders through a robust consultation process and a dedicated effort to develop an appropriate response. Attempting to deal with these sorts of policies on a one-off basis as a response to the impacts of applying policies in a particular case is not appropriate and could result in inconsistent public policy.

The BCUC has recognized that applications to expand service within an existing service area by an established utility are not the place for debating fundamental principles of rate design in its own CPCN Guidelines. Those Guidelines require utilities that are establishing a new franchise to describe their proposed rate structure, but any reference to rate design is conspicuous by its absence in relation to existing utilities.

On December 23, 2011, BC Hydro filed with the BCUC, in a separate proceeding, a letter from the Minister of Energy and Mines included as Attachment 1, to the Chair of

BC Hydro indicating that government intends to undertake a broad review of industrial rates after the F2012 - F2014 revenue requirement proceeding is complete. The letter stated:

> "The provincial government expects to review the TSR and the industrial tariff over the next two years, given their age, the BCUC report, and the Province's economic development priorities. This may include policy direction on the Program. The Province prefers to take an integrated approach to policy development, rather than address issues on a one-off basis."

BC Hydro has sought clarification of the extent to which some of the issues discussed above will be implicated in the review and has asked government to provide it, the BCUC and interested parties with an update of its plans in regard to these issues. In the meantime, for the reasons set out in this letter and consistent with the government's general position expressed in the attached letter, BC Hydro believes that changes to the tariff ought not to be undertaken on an *ad hoc* basis in the context of a specific project such as the DCAT Project.

BC Hydro appreciates that the scope implied by these comments is narrower than the scope assumed in many of the Round 3 IRs. This letter has attempted to identify areas that should be ruled outside the scope of this review.

BC Hydro is aware that there are questions in the Round 3 IRs that do not relate to those matters that BC Hydro has submitted are outside the scope of this proceeding. Moreover BC Hydro has additional information available now relating to some of these in scope topics. For that reason, BC Hydro has prepared supplemental direct evidence that is intended to update the BCUC and interested parties on recent developments relevant to the application and in the process address a number of the in-scope Round 3 IRs. The supplemental evidence is provided as Attachment 2 to this letter.

BC Hydro does acknowledge the relevance of many of the large number of questions relating to a generation alternative to the DCAT Project. During the period the hearing has been suspended, BC Hydro has taken the opportunity to analyze a generation alternative in more depth and to confirm its view that a generation solution for the DCAT Project area is not attractive from a system point of view. The updated evidence provided support for this conclusion. However, this evidence does not contain an independent BC Hydro analysis of the potential for customers to generate their own electricity from natural gas. DCAT Project Customers should be free to choose between self-generation and purchase from BC Hydro on the same basis all other customers are. There have been developments in a number of other relevant areas and BC Hydro has taken advantage of this opportunity to update the following additional areas relevant to the Application:

- Overview of Supplemental Evidence
- General Customer Evidence
- Load Forecast for the DCAT Project Region
- System Planning Evidence
- N-1 Evidence
- Tariff Supplement No. 6
- Update of Project Evidence
- First Nation Evidence

The supplemental evidence is prepared in question and answer form in a manner that seeks to identify the new material available to the parties in a coherent and logical manner while at the same time addressing the within scope issues raised in the Round 3 IRs.

In this letter, BC Hydro has sought to provide its perspective on the scope of the hearing moving forward and has attached the evidence it believes is necessary to allow the BCUC to assess the application within that scope. That evidence discloses that, notwithstanding the delay in the regulatory process that has occurred to date, the DCAT Project remains the preferred means to bring the quality of service in the DCAT Project area to the level it is required to be and to serve the load of the five new customers that have reaffirmed their interest in receiving service from BC Hydro. BC Hydro believes that the direct evidence responds to many of the Round 3 IRs in all areas within the scope disclosed above. As well, many questions that remain unanswered may not appear as important in light of the new information in the evidentiary update. Accordingly, BC Hydro believes it may be possible to recommence the hearing process by calling for intervener evidence, establishing an information request process in that connection and setting the matter down for written or oral hearing. Alternatively, a final round of IRs focused exclusively on the attached new evidence may be appropriate. Of course, BC Hydro recognizes that other parties should be given an opportunity to comment on the approach proposed in this letter and asks that the BCUC establish a process by which that might occur.

BC Hydro does not believe the request in this letter is inconsistent with the BCUC's determination in Order G-184-11 (November 8, 2011). However, to the extent there is any inconsistency, BC Hydro requests that order be varied due to changed circumstances as more fully described in this letter and the attached evidence.

BC Hydro continues to believe there is considerable urgency in connection with hearing this application. Existing customers need solutions and new customers need to know if they will be forced to make alternate arrangements or abandon their plans. Accordingly, BC Hydro respectfully asks the BCUC to require any submission in connection with the

process proposed in this letter be filed expeditiously so that this matter can be heard and a final disposition obtained as soon as possible.

For further information, please contact Geoff Higgins at 604-623-4121 or by e-mail at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

for Janet Fraser
Chief Regulatory Officer

gh/af

Enclosure

Copy to: BCUC Project No. 3698640 (DCAT) Registered Intervener Distribution List.

Dawson Creek/Chetwynd Area Transmission Project

BC hydro

Attachment

1

Minister of Energy and Mines Correspondence to BC Hydro December 23, 2011

NOV 2 1 2011

BRITISH COLUMBIA

Mr. Dan Doyle
Chair
Board of Directors
BC Hydro
18th Floor, 333 Dunsmuir Street
Vancouver, BC V6B 5R3

Dear Mr. Doyle:

The purpose of this letter is to clarify the Shareholder's position regarding BC Hydro's Retail Access Program (Program).

I understand the Program was developed as a result of policy direction set in the 2002 Energy Plan, and that the purpose of the Program is to enable industrial electricity customers to access some or all of their power from the market. I also understand the Program has not been used to date.

Ministry of Energy and Mines (Ministry) staff have informed me that the British Columbia Utilities Commission (BCUC) provided a report to the provincial government on the Transmission Service Rate (TSR) on December 31, 2009. It recommended several potential revisions to the TSR, including the Program. Ministry staff have also advised me that BC Hydro suspended the Program due to design deficiencies that may prove detrimental to non-participating ratepayers.

As you know, the BC Hydro Review Panel submitted its Review Report (Report) to the Province on June 30, 2011. Recommendations 43 and 44 covered rate design objectives and priorities. As noted in my August 29, 2011 letter to you, it is my view these recommendations should be addressed after the conclusion of BC Hydro's 2012-2014 Revenue Requirements proceeding.

The provincial government expects to review the TSR and the industrial tariff over the next two years, given their age, the BCUC report and the Province's economic development priorities. This may include policy direction on the Program. The Province prefers to take an integrated approach to policy development, rather than address issues on a "one-off" basis. To this end, I am directing BC Hydro to extend the suspension of the Program until a comprehensive review of industrial electricity policy is complete.

.../2

Ministry of
Energy and Mines
and Minister Responsible for Housing

Office of the Minister

Mailing Address:
PO Box 9060 Stn Prov Govt
Victoria BC V8W 9E2

Mr. Les MacLaren, Assistant Deputy Minister, Electricity and Alternative Energy Division, will be the lead Ministry executive for this initiative. Mr. MacLaren and/or his staff will contact BC Hydro staff to discuss next steps in the near future.

Thank you for your support on this matter.

Sincerely yours,

Rich Coleman
Minister

pc: Mr. Les MacLaren
Assistant Deputy Minister
Electricity and Alternative Energy Division
Ministry of Energy and Mines

Dawson Creek/Chetwynd Area Transmission Project

BC hydro

Attachment

2

Supplemental Evidence

March 23, 2012

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1 Overview of Supplemental Evidence

Q1. What is the purpose of this Supplemental Evidence?

A1. This evidence has been prepared in support of BC Hydro's request in the cover letter of March 23, 2012 that the BCUC's review of the DCAT Project be resumed. It will describe the nature of the supplemental evidence BC Hydro is filing in support of this request and explain why BC Hydro seeks to resume the CPCN review at this time.

Q2. What is the nature of the evidence being filed?

A2. It generally falls in two categories. First, there have been developments in connection with a number of the areas addressed in the Application and this evidence is intended to update the record in that connection. Second, the third round information requests made clear that BC Hydro could add clarity to its position in connection with a number of subject areas that continue to be of interest to the BCUC, its staff or Interveners. Rather than do this piecemeal through information responses, BC Hydro has sought to set out its evidence in a coherent manner to facilitate the continued review of the DCAT Project.

Q3. What subjects does the evidence cover?

A3. The evidence begins by reviewing the need for the project in the first place. The focus of this evidence is on the discussions that have been had with the five new customers that account for the majority of the load that will be served by the DCAT Project and the nature of the security arrangements that are being made with them. The progress made in connection with this latter issue removes most of the stranded asset risk associated with transmission system reinforcements that would need to be recovered from existing customers. Because BC Hydro has also released a new load forecast since the DCAT review was suspended, the evidence includes an update in that regard which

is of particular interest in connection with the longer term loads expected in the DCAT Project area.

The evidence then revisits the System Planning Report that was filed as Appendix B to the Application to ensure it remains robust in the face of developments since it was prepared. In the course of that assessment, system planners were also asked to consider plausible alternative plans identified in information requests or that might arise due to changed circumstances. Their conclusions are also presented in this evidence.

Interveners and BCUC staff have expressed interest in exploring the potential to meet the DCAT Project loads through non-transmission alternatives based on local generation. BC Hydro undertook a focused analysis on that alternative and the evidence also contains a description of its efforts in that regard.

Interest was also expressed in information requests in connection with the manner in which the tariff would be applied to the new customers in the DCAT Project area. The evidence includes a description of the manner in which BC Hydro employs Tariff Supplement No. 6 (**TS 6**) in connection with transmission voltage loads and also the manner in which that treatment will be extended to new large customers taking service at distribution voltages.

Interest was also expressed in connection with the service quality that BC Hydro is planning to provide pursuant to the Mandatory Reliability Standards (**MRS**) approved by the BCUC for BC Hydro planning and service.

Since filing the DCAT Application, BC Hydro has continued to progress with the design phase, and that progress is also described in the evidence. In particular, the evidence describes the Chapters of the Application that have changed and requires updating with replacement pages to be inserted in the application to reflect more current information relating to project design, cost

and schedule, and some updated environmental information. As well, the evidence describes the progress that has been made with respect to consultation with potentially affected First Nations.

Q4. Has BC Hydro's assessment of the need for the DCAT Project or the appropriateness of its design in connection with meeting that need changed in light of this additional information?

A4. No. To the contrary, the progress BC Hydro has made in obtaining commitments for security from the five new customers has removed the primary stranded asset cost risk that BC Hydro and its ratepayers would assume by undertaking this project. BC Hydro continues to be confident that the DCAT Project is the right project at the right time and can be undertaken in a way that meets the needs of all parties.

2 General Customer Evidence

Q5. Does BC Hydro have confidence that if the DCAT Project facilities are constructed, there will be sufficient revenue from new customers to recover their proportionate share of the costs of those facilities?

A5. Yes. Recent discussions with customers have confirmed the willingness of these customers to post security sufficient to guarantee that the cost of their proportionate share of the DCAT Project facilities will be fully paid for either through the tolls these customers pay or because they forfeit their security to BC Hydro pursuant to the tariff.

Q6. Have those recent discussions provided BC Hydro with precise knowledge concerning the timing and scale of their needs?

A6. BC Hydro believes that all five customers have shared the information they have in an open and transparent way. Some of the customers already have needs that are going unmet and thus can be very precise. The load of others will be contingent on how quickly they can bring on their projects. However, all five customers are sufficiently confident in their needs that they have committed to provide security for their proportional share of DCAT System Reinforcement costs. The recent progress BC Hydro has made in making arrangements for these customers to post security has removed the primary risk that BC Hydro will be burdened with unneeded and unpaid for transmission facilities as a result of the DCAT Project.

Q7. When and in what form did the initial contact with the five identified customers occur in the context of their desire to obtain significant incremental electric service from BC Hydro within the DCAT Project area?

A7. The timing of these initial contacts varied. The earliest occurred in July 2008 and the latest occurred in November 2010. Each of the discussions was initiated by the applicable customer, whether by email or in a regularly scheduled meeting or forecast update with that customer's BC Hydro Key

Accounts Manager. In one case the customer did not have a Key Accounts Manager at that time, and so made the inquiry via email to BC Hydro's Customer Care team.

Q8. What are the aggregate loads and their timing for the five identified customers' DCAT Project loads?

A8. The five identified customers' aggregate loads (in MW) to be served by the DCAT Project, and the anticipated in service dates for those plants are as follows:

Table 1 Customer Loads

2011	2012	2013	2014	2015	Total
20.6	7.0	73.9	37	40	178.5

In general, those plants planned to be in service before the DCAT Project's expected in-service date are to be powered either by temporary generation on site or by distribution service until the DCAT Project is in service. In some cases, further delays to the DCAT Project may result in a delay to the customer's project, or may require the customer to decide whether to make further purchases of temporary generation equipment.

There are additional loads forecasted for later years, which are not included in the DCAT Project load and are therefore not shown here.

Q9. What factors caused these customers to prefer electricity over natural gas?

A9. Each customer will have evaluated that choice based on its own needs. From conversations with various customers, BC Hydro understands the advantages of electricity to include:

- Lower noise levels
- Zero greenhouse gas and other emissions
- Greater reliability

- Lower maintenance costs

Of course, each customer will balance those advantageous characteristics against other attributes of alternatives including economic factors.

Q10. When does BC Hydro anticipate that the five identified customers will enter security agreements with BC Hydro for the DCAT Project?

A10. Each of the five identified customers has signed a letter in support of the DCAT Project indicating its willingness to provide security for DCAT System Reinforcements based on the customer's proportionate share of new customer load. Those letters were filed confidentially with the BCUC in an updated response to BCUC IR 1.38.2.3.

BC Hydro anticipates that each of the customers who have requested Transmission service will sign a binding agreement by end of April 2012 for their portion of the DCAT System Reinforcement security.

BC Hydro anticipates that each of the customers who have requested distribution service will sign a binding agreement by end of April 2012 for their portion of the DCAT System Reinforcement security, subject to BCUC approval of tariff changes to accommodate this.

Each of these agreements will require the customer to provide its portion of the DCAT System Reinforcement security within ten days of notification that a CPCN has been issued for the DCAT Project.

Q11. How is BC Hydro addressing further requests to serve new customers beyond these five identified customers within the area served by the DCAT Project?

A11. Further customer inquiries have been and are being made of BC Hydro in this region. BC Hydro's answer is that due to transmission capacity constraints it is uncertain whether BC Hydro will be able to serve the load with high reliability of service until the DCAT Project is in service. BC Hydro has recently been requiring new customers to sign agreements that BC Hydro can

shed their load. In this way BC Hydro is attempting to be responsive to new customers' requests for service, while still protecting existing customers.

Some of the requests have been for more than 10 MW. BC Hydro has spoken with these customers about the need for System Reinforcements, but has not yet requested security because of the early stage of these inquiries. Based on existing load forecasts and transmission system capacity constraints, these customers would have to wait for further system reinforcements beyond the DCAT Project in order to take N-1 service – i.e., a Phase 2 project (generally referred to as the GDAT project but which has not yet been defined). Depending on the size of the request, in some cases BC Hydro may be able to provide N-0 service, subject to a load shedding agreement, in the interim between DCAT Project and the later GDAT project.

As a general rule, lead times (e.g., due to studies, permitting, and construction) to obtain distribution service are shorter than for transmission service. Although the distribution rate schedule is more expensive than the transmission rate schedule, prospective customers in this region have been pursuing distribution in order to receive service more quickly. For some of the producers in this region, timing is extremely important. As a general trend, BC Hydro is seeing that these energy sector customers are willing to pay the increased rate costs of distribution over transmission, at least temporarily, in order to obtain service sooner. Two of the distribution loads recently connected or requested in this region are (or, once connected, will be) BC Hydro's largest distribution loads in the province. Until recently there was available capacity in the Dawson Creek substation and upstream transmission lines which feed the Dawson Creek substation. However, large energy sector loads have consumed the available capacity in the upstream assets, resulting in a queue forming for both distribution and transmission service requests. All new industrial loads requested in the Dawson Creek area either have accepted or will accept load shedding under N-1 conditions.

Any new load over 1 MW will be required to enter into a load shedding agreement.

Q12. How dependent are the load requirements of the four gas producer customers on the location of compression along the gathering lines?

A12. BC Hydro has been advised that for the four gas producers, electric driven engines are more likely to be utilized for natural gas compression at the gas plants, which are more centralized and designed for greater throughput, than at the smaller compressor stations distributed throughout the field. The load requirement for a compressor is generally independent of the field position and will be designed on specific parameters such as suction pressure, discharge pressure, gas quality, and capacity. The size of gathering lines and sales lines are engineered to meet the process requirements of the compressor station.

Q13. BC Hydro has indicated that the aggregate load of the five new customers cannot be served to a N-1 standard, even if DCAT Project is built. What assurances have you provided to these customers that you will be able to eventually meet the N-1 standard in the context of their load requirements?

A13. BC Hydro has indicated that under MRS it is required to serve all its bulk system customers, including their new load, to the N-1 standard. It has further advised them that it expects that this objective will be accomplished through the Phase 2 GDAT project but that this approach is dependent upon the BCUC issuing a CPCN first for the DCAT Project and then for a GDAT project. If the BCUC declines to issue a CPCN for one or both of these projects, BC Hydro has indicated that it will seek appropriate alternative ways to meet its obligation to serve these customers. However, it has also indicated that in that circumstance, service would be considerably delayed.

Q14. Have these customers indicated what alternative actions they will take if service from BC Hydro is significantly delayed?

A14. Each customer will face different choices. Those customers with later projects, for which natural gas driven engines remain an option, may install non-electric drive compression, but that decision and the attendant economic and emissions consequences will be irreversible. Those customers that have committed to electricity already may incur significant additional expense to run temporary generators, which may be fueled by either natural gas or diesel. Some customers may simply be unable to operate their facility economically and therefore will shut down until service is available or they may abandon their plans entirely.

Q15. Can you please elaborate on the progress of your conversations with each customer and elaborate on your understanding of the needs of each?

A15. Yes. The evidence that follows describes the discussions with each of the five customers to a level that each is comfortable with. BC Hydro takes pains to protect the confidentiality of its customers because that enables its customers to fully disclose their future plans. All customers benefit from the improved planning that this disclosure makes possible. In this case, BC Hydro has sought the permission of each customer to disclose aspects of the conversations that have occurred and the level of detail which follows reflects what each customer is individually comfortable with.

2.1 Air Liquide

Q16. When did the initial contact with Air Liquide occur in the context of its desire to obtain significant incremental electric service from BC Hydro within the DCAT Project area?

A16. On November 1, 2010 Air Liquide contacted BC Hydro's Customer Care team seeking information for supplying power to their proposed new plant in Dawson Creek. This request was forwarded to the Load Interconnections

team. Subsequently, given the size of the potential load request, a Key Accounts Manager was assigned to work with the customer.

Q17. When did Air Liquide formalize and quantify its interest in this regard?

A17. On March 15, 2011 Air Liquide submitted a study request for service.

On April 1, 2011 Air Liquide made a phase 2 request for further service to accommodate a second plant.

The expected in-service dates for the phase 1 and phase 2 requests for service were March 2012 and March 2013 respectively.

Q18. What is the current status of Air Liquide needs and request for service?

A18. On June 2, 2011, Air Liquide revised its phase 1 load downward.

On July 6, 2011, Air Liquide revised its phase 2 load downward by a similar amount. Phase 1 is due to be energized in March 2012. Phase 2 is expected to be energized as soon as the DCAT Project is in service.

Q19. What steps has BC Hydro taken to minimize or manage the incremental requirements of each customer?

A19. Air Liquide completed a Power Smart New Plant study for Phase 1. That study looked at all avenues for achieving efficiency, including motors, air compressors, process enhancements and other measures. This was a comprehensive study and was approved by BC Hydro on January 4, 2012. A similar Power Smart New Plant study is expected to be conducted for Phase 2 in the near future.

Q20. Are you aware of any steps that this customer has taken or is proposing to take to meet its electricity needs prior to BC Hydro being able to provide it with electric service?

A20. No. BC Hydro is not aware of any plans for this customer to meet its energy needs other than by taking service from BC Hydro.

Q21. Could Air Liquide meet its needs by using natural gas instead of electricity at its plant?

A21. No. Unlike gas producers, Air Liquide's plant processor cannot employ natural gas instead of electricity. Air Liquide's only option if electric service is not available from BC Hydro would be to close its operation. Air Liquide has advised that generation of its own power is not economically viable on a sustained basis for this plant.

Q22. Has BC Hydro completed the required studies in connection with the provision of service to Air Liquide? If not, when would it anticipate the required studies for Air Liquide being complete?

A22. The first required study for Air Liquide's service needs is expected to be completed by the end of April 2012. The second required study is expected to be completed in September 2012.

Q23. Has Air Liquide entered into a binding agreement with BC Hydro? If not, when would BC Hydro anticipate that it will do so?

A23. Air Liquide has signed a letter in support of the DCAT Project and indicating its willingness to provide security for DCAT System Reinforcements based on Air Liquide's proportionate share of new customer load.

BC Hydro anticipates that a binding agreement will be entered into with Air Liquide in April 2012. This agreement will set out the security required for Air Liquide's portion of DCAT System Reinforcements, and will require delivery of security within ten days of notification that a CPCN has been issued for the DCAT Project.

This agreement will also indicate that upon completion of the second required study, the agreement will be revised to include additional costs and contributions applicable under BC Hydro's tariff.

2.2 Arc Resources Ltd.

Q24. When did the initial contact with ARC occur in the context of its desire to obtain significant incremental electric service from BC Hydro within the DCAT Project area?

A24. In Q1 2010 BC Hydro and ARC were having regular meetings regarding the ARC Dawson project which was then underway. It was during an in-person meeting on January 18, 2010, that ARC first communicated the potential for future loads in the Dawson Creek area to the Key Accounts Manager.

Q25. When did ARC formalize its interest in this regard?

A25. The request for service for ARC Sunrise 2 was made on March 12, 2010 for a load of 7 MW at Distribution voltage with an in service date of 2013.

Q26. Since then has ARC updated the quantity or timing of its needs?

A26. Yes. ARC increased its request for service at its Sunrise 2 Project first to 8 MW and subsequently, in April 2011, to 9 MW. The in-service date was revised to Q4 2013. BC Hydro and ARC agreed to deem the load request for ARC Sunrise 2 or an equivalent project in the Dawson Creek area to be 10 MW for BC Hydro's planning purposes.

Most recently, in January 2012, ARC indicated it incremental needs for electricity within the DCAT Project area would arise in Q2 2014.

Q27. What steps has BC Hydro taken to minimize or manage the incremental requirements of ARC?

A27. A Power Smart New Plant Study has been conducted for the Sunrise 2 location. This study investigated numerous avenues for achieving efficiency, including motors, pipeline diameters and other measures. The New Plant Study contains the details of the types of electric drives to be used and their characteristics. BC Hydro engineers have ensured that the New Plant Study is comprehensive. The study has been accepted by BC Hydro, and will be

funded as part of the Power Smart New Plant offer. ARC also hired the same consultant to complete a gas gathering Power Smart New Plant Design Study which was recently approved by BC Hydro engineers.

Q28. Are you aware of any steps that ARC has taken or is proposing to take to meet its energy needs prior to BC Hydro being able to provide it with electric service?

A28. ARC is contemplating the installation of temporary generation at its new facilities if the DCAT Project is not in service by Q2, 2014.

2.3 Encana Corporation (Encana)

Q29. When did the initial contact with Encana occur in the context of its desire to obtain significant incremental electric service from BC Hydro within the DCAT Project area?

A29. Encana, a BC Hydro customer since 2005, has been providing BC Hydro with its future load forecasts for the Peace region on a quarterly basis, including locations, timing and load. This has been done by way of a series of scheduled telephone calls between Encana and its Key Accounts Manager.

Q30. When did Encana initially indicate it needed significant incremental electric service and what was the quantity and timing of the need?

A30. On August 8, 2010 Encana submitted a request for 7 MW of distribution service.

Q31. Has Encana indicated any change in its needs since then and if so, how has BC Hydro responded?

A31. Yes. On October 28, 2010 Encana revised the location for its distribution service, and indicated it would need 10 MW by December 2012.

It then revised the load to 12.9 MW. BC Hydro then conducted a study that identified that 11 MW would be the largest load that could be served to Encana on the existing distribution feeder. BC Hydro presented a proposed

electric service agreement (**ESA**) and Design Estimate letter to Encana on June 17, 2011. Any incremental load above 11 MW would need to be served via a second feeder. Encana did not accept the 11 MW limit in the proposed ESA as adequate to meet its needs. Since that time, Encana's load request has increased to 13.9 MW. In consequence, BC Hydro is preparing two ESAs and two Design Estimate Letters, one set for 11 MW, and a second set for 2.9 MW through a second feeder. BC Hydro expects to deliver these ESAs and Design Estimate Letters to Encana by late March or early April 2012.

The DCAT Project security estimates for Encana were originally based on the 11 MW that could be served on the existing distribution feeder. The security requirements are being updated to reflect the additional 2.9 MW load requested at that site.

The in-service date has now been moved to December 2013 for this entire load.

Q32. What steps has BC Hydro taken to minimize or manage the incremental requirements of Encana?

A32. Encana has an approved study for a New Plant Design. This study looked at numerous avenues for achieving efficiency, including motors, variable frequency drives and other measures. The New Plant Study included the details of the types of electric drives to be used and their characteristics. Encana and BC Hydro engineers worked to ensure that the New Plant Study was comprehensive. In addition, BC Hydro anticipates that Encana will submit, prior to the load being served, a gas gathering study proposal that will focus on pipeline sizes.

Q33. Are you aware of any steps that Encana has taken or is proposing to take to meet its energy needs prior to BC Hydro being able to provide it with electric service?

A33. Encana has indicated that an in-service date of December 2013 is required to meet its current project timeline. Encana has indicated that it will be monitoring the expected timing for electric service. Should there be any delays expected that would exceed the timing required for its facility start-up, then it would undertake an evaluation of the options available, including alternative energy supply for the interim period which may consist of hydrocarbon driven (either natural gas or diesel) generation.

Q34. Could Encana now decide to employ natural gas compression at its plant and avoid the need for electric supply entirely?

A34. At this time, Encana has kicked-off its project plans on the basis of having electric service available and has fully configured its plant to utilize electric driven motors for compression only. Encana has informed BC Hydro that if for any reason BC Hydro could not supply electric service, Encana would be forced to recommence project plans to design for natural gas driven engines for compression.

Q35. Has BC Hydro completed a facilities study in connection with the provision of service to this customer? If not, when would it anticipate the facilities study for this customer being complete?

A35. No. For distribution voltage customers, the ESA process serves as a substitute for the Facilities Agreement under TS 6 that is used for transmission voltage customers.

Q36. When would BC Hydro anticipate Encana committing to the ESA?

A36. Encana is still considering the precise location and configuration of its facilities and the timing of completion of an ESA is therefore uncertain.

Q37. What security arrangements have been or will be made with Encana?

A37. This customer has signed a letter in support of the DCAT Project and indicating its willingness to provide security for DCAT System Reinforcements based on Encana's proportionate share of new customer load.

BC Hydro anticipates that a binding agreement with Encana will be entered into during April 2012. This agreement will set out the security required for Encana's portion of the DCAT System Reinforcements and will commit Encana to post that security within ten days of issuance of a CPCN for the DCAT Project. The ESA that will be provided to Encana will be prepared on the basis that the amendments to the distribution tariff proposed in the application are approved and therefore the security provision in TS 6 will apply to Encana.

2.4 Murphy Oil Company Ltd. (Murphy)

Q38. When did the initial contact with Murphy occur in the context of its desire to obtain significant incremental electric service from BC Hydro within the DCAT Project area?

A38. Murphy energized a 4 MW distribution site in July 2008, and began an ongoing discussion about increasing load in that region in the future. In November 2008, Murphy advised BC Hydro that it was contemplating a potential 20 – 30 MW load at a new plant at Tupper West.

Q39. When did Murphy formalize its interest in this regard?

A39. On February 26, 2009 Murphy requested BC Hydro to undertake a Conceptual Review for 23 MW of transmission service. In a Conceptual Review, BC Hydro provides high level comments on available transmission capacity, the method of connecting to the BC Hydro system, and potential system changes and upgrades involved. Based on this review, on November 30, 2009 Murphy requested a System Impacts Study (**SIS**) for

23.1 MW. The SIS was completed on September 20, 2010. The SIS indicated that load from Murphy's plant would likely need to be shed during winter months due to capacity constraints. The SIS further indicated that transmission reinforcements such as the DCAT Project would be required in order to serve Murphy on a permanent basis.

Q40. What is the current status of Murphy's estimate of its needs and request for service?

A40. Murphy has completed its plant and is now operating (commissioned in February 2011). It has confirmed its peak load at 20.6 MW. Murphy is currently meeting its requirements for electricity in that regard through its own temporary generator using natural gas.

Q41. What steps has BC Hydro taken to minimize or manage the incremental requirements of Murphy?

A41. Murphy participated in the New Plant Power Smart design program. They hired a consultant to conduct that study and they implemented the efficiency measures identified. The study looked at numerous avenues for achieving efficiency, including lighting, motors, air compressors, pipeline diameters and other measures. The New Plant Study included the details of the types of electric drives to be used and their characteristics. A gas gathering system study was completed as part of the New Plant Study. This was a comprehensive study and was approved by BC Hydro on December 21, 2010.

Q42. Could Murphy now decide to employ natural gas compression at its plant and avoid the need for electric supply entirely?

A42. No. It has configured its plant to use electric compression.

Q43. Has BC Hydro completed a facilities study in connection with the provision of service to this customer? If not, when would it anticipate the facilities study for this customer being complete?

A43. A Facilities Study is underway but not yet complete for Murphy. BC Hydro expects to complete the study in the summer of 2012.

Q44. Has BC Hydro entered into a Facilities Agreement with this customer? If not, when would BC Hydro anticipate doing so?

A44. No. BC Hydro expects to enter a Facilities Agreement within about two months of the completion of the Facilities Study.

An interim Facilities Agreement will be entered prior to completion of the Facilities Study, and is expected to be executed by the end of April 2012. The interim Facilities Agreement will stipulate that Murphy must deliver the required security within ten days of notification that a CPCN has been issued for the DCAT Project.

The interim Facilities Agreement will also indicate that upon completion of the Facilities Study a final Facilities Agreement will be entered into that will reflect the incremental System Reinforcements (such as VAR support equipment) costs as defined in TS 6 that are triggered by the interconnection of Murphy's new load

2.5 Shell Canada Ltd.

Q45. When did the initial contact with Shell Canada Ltd. (Shell) occur in the context of its desire to obtain electrical service from BC Hydro within the DCAT Project area?

A45. Shell first contacted BC Hydro in April 2009 to inquire about potential new load in the DCAT Project area. In October 2009, at a meeting between BC Hydro's Key Accounts Manager and Shell representatives, Shell indicated that it was interested in obtaining at least 120 MW of service from BC Hydro.

Q46. Did Shell request a System Impact and Facilities Studies?

A46. On October 21, 2010 Shell submitted a request for a joint System Impact and Facilities Study. At that time it estimated a future total load of 281 MW for five potential gas plants located in Groundbirch area. Based on its ongoing discussions with Shell, BC Hydro was aware that this estimate was based on very preliminary projections assuming staged but full development of all potential fields in Shell's area and assuming each stage of development could be economically justified. Before the System Impact and Facilities Study was completed, Shell made it clear to BC Hydro that in relation to the DCAT Project it was only willing to commit to 120 MW.

Q47. What is Shell's anticipated power demand for DCAT?

A47. 60 MW in 2013, and a further 60 MW in 2014-2015.

Q48. Is Shell committed to this amount of power demand?

A48. Shell is fully committed to this 120 MW of power. It has agreed to provide security to support this commitment, and anticipates Facilities and Security Agreements will be completed and signed by the end of April 2012 documenting this level of commitment.

Q49. Has Shell provided any indication of when, and under what circumstances, it may request more power demand from BC Hydro beyond 120 MW?

A49. Shell has identified the possibility of future loads in excess of 120 MW if full field development is ultimately realized. However, Shell has made it clear to BC Hydro that loads in excess of this level are highly speculative and have only been provided to BC Hydro to identify potential future demands to assist BC Hydro in its longer term planning. It has also been made clear to BC Hydro that although Shell's preference is to supply potential future needs with grid electricity, Shell will only request additional service from BC Hydro if additional appraisal work in other areas of its Groundbirch field demonstrate

that economical production is achievable, and if that development fits within Shell's broader investment strategy and desired overall pace of its development.

Q50. Will the DCAT Project be in service in time to meet Shell's needs at each of its sites?

A50. No. The DCAT Project will serve two sites, Saturn and Sunset, each with two phases. Each phase requires 30 MW of power. Shell has made the decision to supply these sites with electricity from BC Hydro. Shell anticipates that two of its plants, requiring 30 MW of power each will be operational prior to the end of 2013 which was when the DCAT Project was originally planned to be in service. Shell is making arrangements to install temporary natural gas fuelled electrical generators at these sites to meet the needs of these facilities until BC Hydro service is available. BC Hydro has been informed that besides the millions of dollars spent on these facilities for design and related costs, to date Shell has committed over $30 million for these temporary generators. As noted, Shell currently anticipates that it will require an additional 30 MW of power at each of these sites over the course of 2014/2015 (for a total of an additional 60 MW of power) and has the understanding from discussions with BC Hydro that this need can be met by the DCAT Project.

Q51. What steps has BC Hydro taken to minimize or manage the incremental requirements of each customer?

A51. Shell has hired a consultant to conduct a New Plant Study under the Power Smart program. The study is due to be completed by March 25, 2012. That study will look at numerous avenues for achieving efficiency, including motors, air compressors, pipeline diameters and other measures. The New Plant Study will include the details of the types of electric drives to be used and their characteristics. BC Hydro engineers will make sure that the New Plant Study is comprehensive. Once accepted by BC Hydro, the study will be funded as part of the Power Smart New Plant offer.

Q52. What security will Shell be providing?

A52. Shell will provide security to cover two categories. First it will provide security calculated on the basis of its pro rata share of the 60 per cent of the cost of the DCAT Project allocated to new customers. Second, it will provide security that covers the cost of incremental System Reinforcements triggered by the interconnection of its load (e.g., VAR support equipment).

BC Hydro anticipates that a binding agreement will be entered into in April or early May 2012 providing for this security to be delivered by Shell within ten days of the issuance of a CPCN.

3 Load Forecast for the DCAT Project Region

Q53. The system planning report found at Appendix B to the application contains a load forecast to the DCAT Project region beginning at p. 73 of 100. Does that forecast remain current?

A53. No. Since the Application was filed, BC Hydro has updated its system load forecast as of December 2011, and that in turn has permitted it to update its evidence as set out below with respect to the anticipated load in the DCAT Project region.

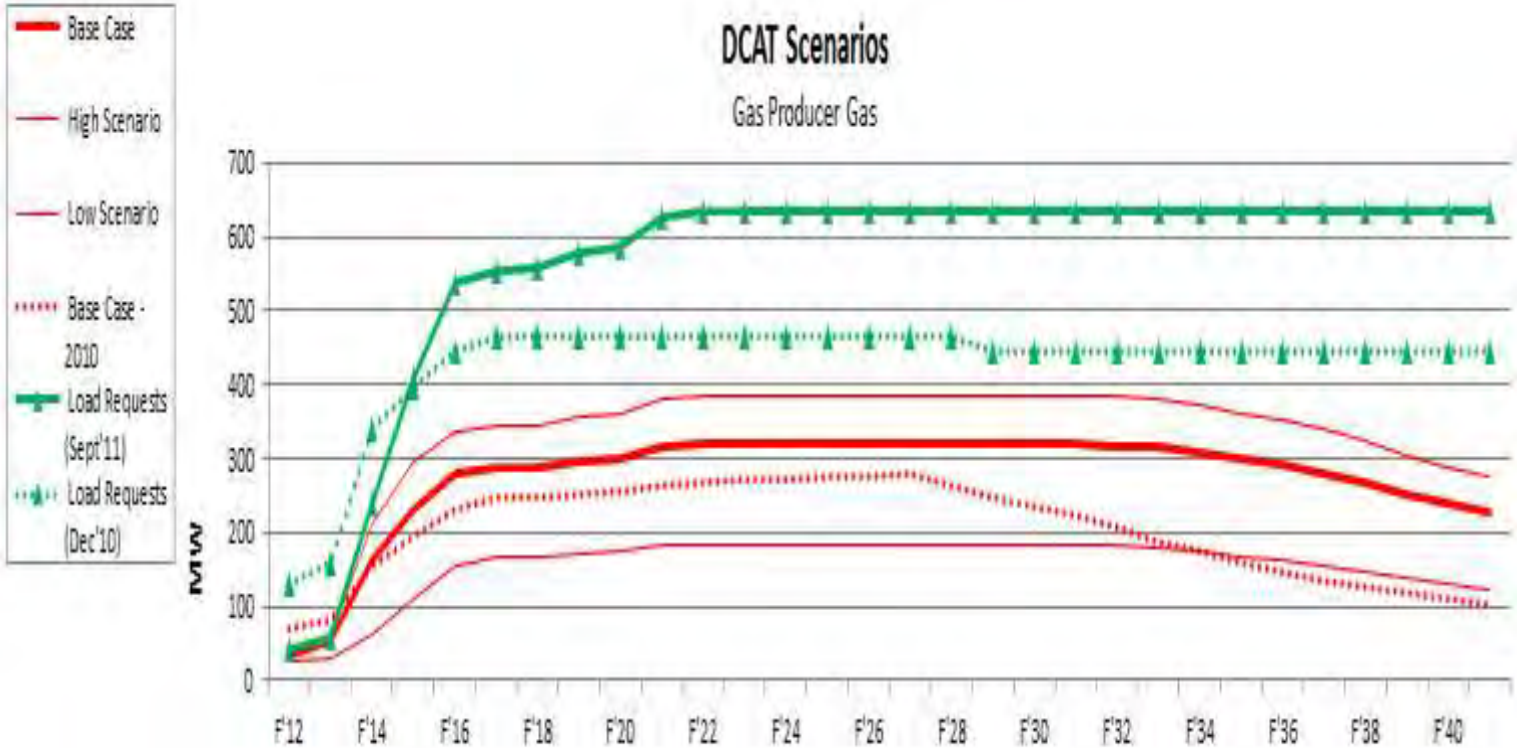
Q54. Please elaborate on how the forecast has changed since the Application was filed.

A54. Since the Application was filed, BC Hydro has obtained one more year of current performance information with respect to each customer's activity and related interest in taking electricity. In addition, there have been material developments in the near-term spot market and in the long-term markets arising from recent LNG announcements. Finally, there has been updated general information available from consultants and the natural gas industry.

Q55. How has forecast of the needs of the natural gas sector changed?

A55. The needs of the natural gas sector forecast are portrayed in Figure 1 below. For ease of comparison, Figure 1 includes the 2010 load requests and the 2010 base case forecast and compares those to the 2011 load request and the low, base and high forecast for 2011.

1 **Figure 1 DCAT Scenarios**



Increase in Base Forecast	-51%	7%	20%	16%	18%	19%	17%	15%	21%	36%	54%	77%	96%	111%	118%

1 **Gas Producer Load (MW)**

	Dec'2011 Forecast				Dec'2010 Forecast	
	Base	High	Low	Requests	Base	Requests
F'12	34	36	24	41	70	131
F'13	54	60	32	60	83	161
F'14	164	212	64	238	153	340
F'15	232	295	110	409	195	396
F'16	279	336	156	537	233	447
F'17	287	344	167	553	246	467
F'18	289	346	169	559	249	467
F'19	296	356	171	576	252	467
F'20	299	359	174	587	254	467
F'21	316	381	183	626	265	467
F'22	319	385	183	635	268	467
F'23	319	385	184	635	272	467
F'24	319	385	184	635	273	467
F'25	319	385	184	635	275	467
F'26	319	385	184	635	277	467
F'27	319	385	184	635	278	467
F'28	319	385	184	635	263	467
F'29	319	385	184	635	247	447
F'30	319	385	184	635	235	447
F'31	319	385	184	635	225	447
F'32	317	383	183	635	206	447
F'33	314	380	180	635	189	447
F'34	308	373	175	635	174	447
F'35	299	362	168	635	160	447
F'36	290	351	162	635	148	447
F'37	281	340	155	635	137	447
F'38	268	324	147	635	127	447
F'39	253	306	139	635	118	447
F'40	240	289	131	635	110	447
F'41	227	274	124	635	103	447

Q56. What are the key drivers of changes in the forecast for gas producers?

A56. The forecast covers three distinct periods, with different drivers for each. First, there are actual results now available for calendar 2011 replacing the forecast for that period. Second, there are changes to short term activities anticipated based on current and near term market conditions. Third, long-term prospects have seen changes in forecast activity in the sector.

Q57. How has recent actual peak load results varied from the original forecast?

A57. The actual measured peak load for the winter of F2012 was approximately 40 MW less than BC Hydro forecast in 2010, which was the basis of the DCAT Project Application. This is mainly due a number of industrial customers, including gas producers and gas industry services companies, energizing later than originally expected (in F2013, instead of the anticipated F2012 winter peak period). In addition, several transmission customers were not operating at their expected full capacity during the winter peak period. This updated information has been incorporated into BC Hydro's current (2011) Load Forecast, as represented in the charts and figures below.

Q58. How has the forecast of the electricity demand from producers changed in the near term between the previous forecast and this one?

A58. The forecast until F2014 has been reduced to reflect the influence of very low current natural gas prices. These prices have led to reduced drilling activity and production rates in the sector as a whole. At the same time, natural gas liquids prices have remained very strong with the result that many producers are focusing their attention on fields that are liquids-rich.

In the near term, producers in the DCAT Project region have evidenced their commitment to continue development as described in Section 2, and by agreeing to post security consistent with that commitment.

Q59. How is that reflected in the producer electricity demand forecast?

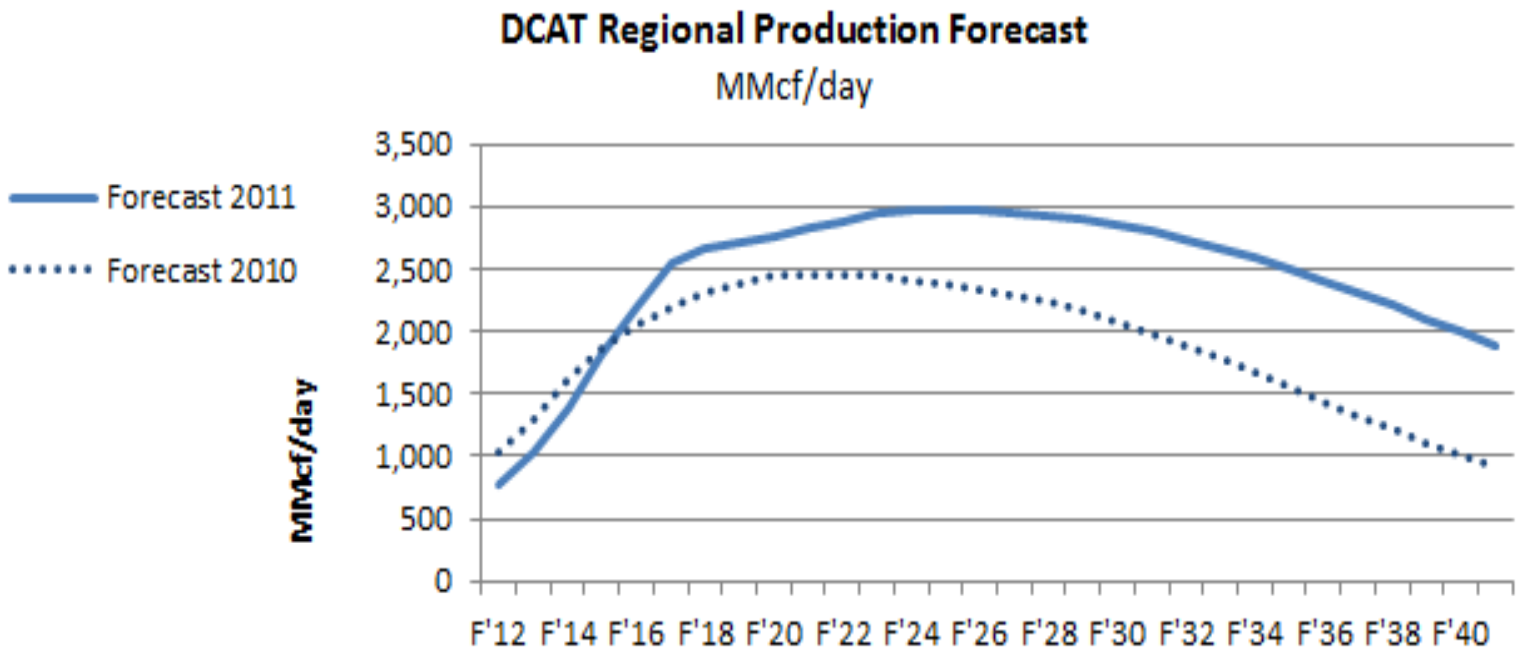
A59. As set out in Figure 1 above, the gas producer forecast is reduced through fiscal 2014.

Q60. After fiscal 2014, how is gas producer demand for electricity forecast to change?

A60. Producers in the DCAT Project region have evidenced their commitment to continue development as described in Section 2, and by agreeing to post security consistent with that commitment. Accordingly, BC Hydro has included their load with a high level of probability in its forecast through F2014. Thereafter the long term forecast is now for more rapid growth in gas producer demands post fiscal 2014. As well, it is anticipated that peak demand from producers will continue over a longer period reflecting less rapid decline in production in the region.

BC Hydro's rationale for the increase is current information on new producing wells in the DCAT Project region that indicate higher initial production rates, longer well life, and therefore improved overall production economics. Together, these factors suggest long-term higher production in the DCAT Project region. The regional gas production forecast is shown in Figure 2 below.

1 **Figure 2 DCAT Regional Production Forecast**



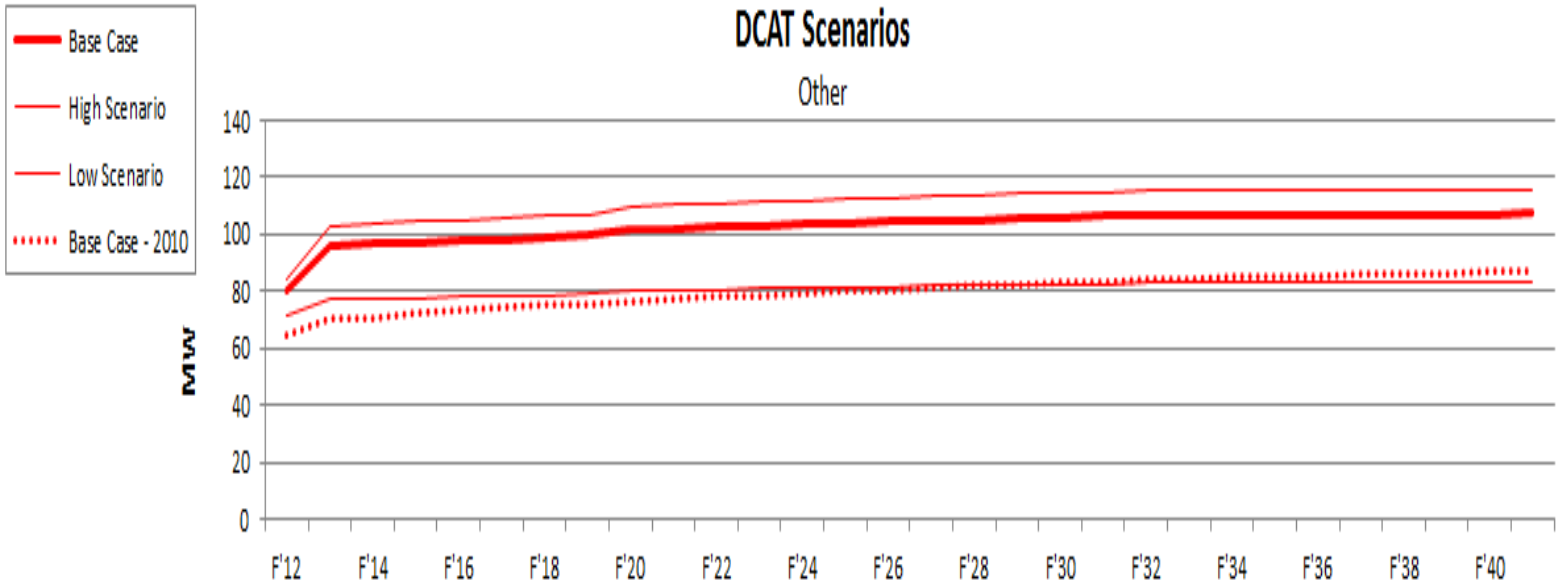
1 **DCAT Regional Production Forecast (MMcf/d)**

	Forecast (MMcf/d)	
	2011	**2010**
F'12	776	1,028
F'13	1,023	1,294
F'14	1,394	1,626
F'15	1,817	1,861
F'16	2,203	2,044
F'17	2,539	2,196
F'18	2,669	2,310
F'19	2,715	2,383
F'20	2,763	2,441
F'21	2,830	2,459
F'22	2,878	2,458
F'23	2,937	2,444
F'24	2,966	2,415
F'25	2,968	2,384
F'26	2,962	2,345
F'27	2,949	2,294
F'28	2,928	2,233
F'29	2,899	2,160
F'30	2,859	2,079
F'31	2,808	1,989
F'32	2,744	1,889
F'33	2,672	1,782
F'34	2,589	1,665
F'35	2,499	1,549
F'36	2,405	1,434
F'37	2,309	1,322
F'38	2,211	1,213
F'39	2,108	1,108
F'40	1,997	1,006
F'41	1,879	910

Q61. How has the forecast for other loads in the DCAT Project region changed?

A61. The other load forecast is shown in Figure 3 below with the same comparators as were provided in Figure 1. Overall, the base case forecast has increased from 2010 to reflect the increased activity that is anticipated in the region over the entire forecast horizon. Activities directly associated with gas production includes: gas processing, drilling, and well operations, with associated spin-off activities in all customer sectors.

1 **Figure 3 DCAT Scenarios**



Increase in Base Forecast	23%	36%	33%	32%	33%	32%	31%	30%	29%	27%	27%	26%	25%	24%	23%

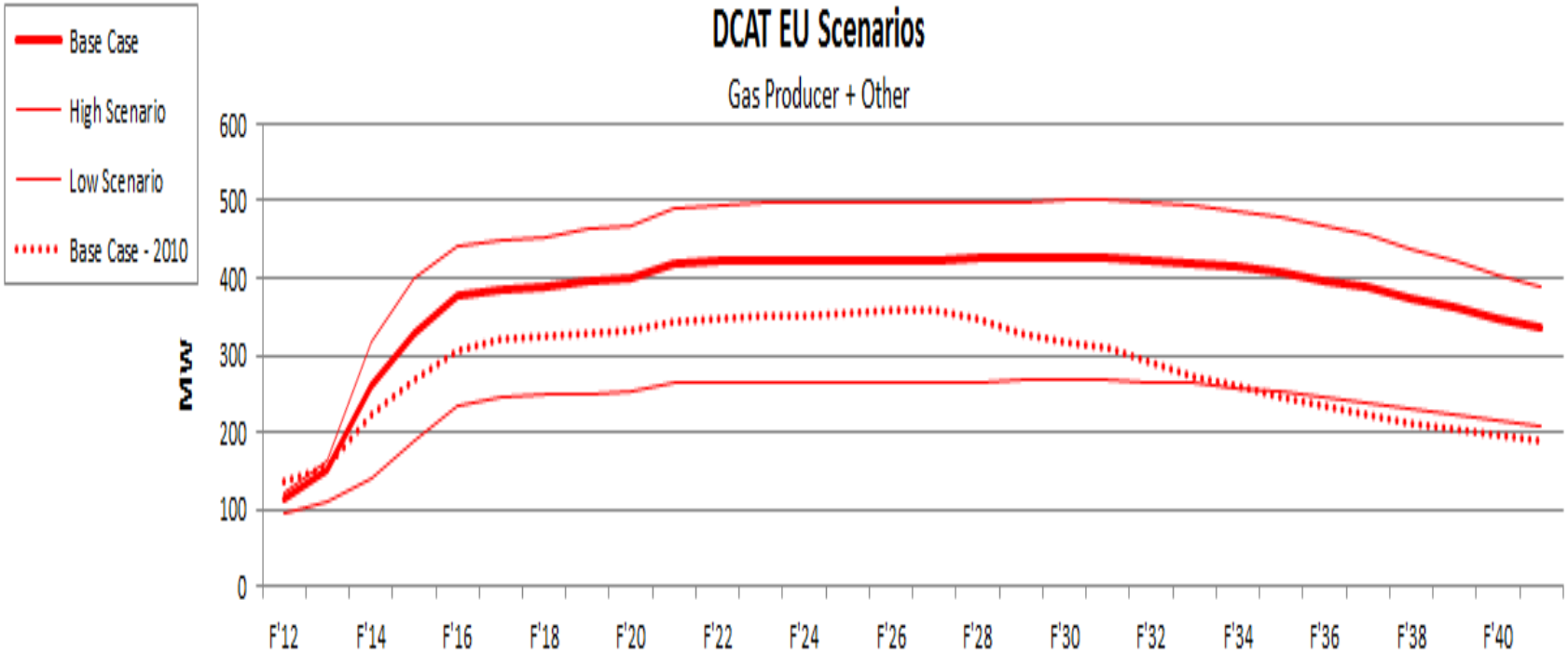
1 **Other Loads (MW)**

	Forecast (MW)			
	Base	High	Low	Base - 2010
F'12	80	84	71	65
F'13	96	103	77	70
F'14	96	104	77	71
F'15	97	104	78	73
F'16	98	105	78	73
F'17	98	106	78	74
F'18	99	106	79	75
F'19	99	107	79	76
F'20	102	110	80	77
F'21	102	110	80	77
F'22	103	111	81	78
F'23	103	111	81	79
F'24	103	112	81	79
F'25	104	112	81	80
F'26	104	113	82	80
F'27	105	113	82	81
F'28	105	114	82	82
F'29	106	114	82	83
F'30	106	115	83	83
F'31	106	115	83	84
F'32	106	115	83	84
F'33	106	115	83	84
F'34	107	115	83	85
F'35	107	115	83	85
F'36	107	115	83	85
F'37	107	116	83	86
F'38	107	116	83	86
F'39	107	116	83	87
F'40	107	116	84	87
F'41	107	116	84	87

Q62. How has the total load for the DCAT Project region then changed since the 2010 forecast?

A62. Total anticipated load from all sectors is shown in Figure 4 below, with the same comparators as in the previous figures. The overall impact is delayed growth initially, but an overall increase in the peak load anticipated and the duration of that peak load. The total load forecast is dominated by the gas producer load forecast.

1 **Figure 4 DCAT EU Scenarios**



	F'12	F'14	F'16	F'18	F'20	F'22	F'24	F'26	F'28	F'30	F'32	F'34	F'36	F'38	F'40
Increase in Base Forecast	-16%	16%	23%	20%	21%	22%	20%	19%	23%	34%	46%	60%	70%	76%	76%

2

1 **Total Load Forecast (Gas Producer and Other) (MW)**

	Forecast (MW)			
	Base	**High**	**Low**	**Base - 2010**
F'12	114	120	95	135
F'13	150	163	109	153
F'14	260	316	141	224
F'15	329	400	188	268
F'16	376	441	235	306
F'17	385	449	245	320
F'18	388	452	247	324
F'19	395	463	250	328
F'20	400	469	254	331
F'21	419	491	263	343
F'22	421	496	264	346
F'23	422	496	264	350
F'24	423	497	265	352
F'25	423	498	265	355
F'26	424	498	265	357
F'27	424	499	266	359
F'28	425	499	266	345
F'29	425	500	266	330
F'30	426	500	267	319
F'31	426	500	267	308
F'32	424	498	265	290
F'33	420	495	263	273
F'34	415	488	258	259
F'35	406	477	251	245
F'36	397	466	245	233
F'37	388	456	239	223
F'38	375	439	231	213
F'39	360	422	223	204
F'40	347	405	215	197
F'41	334	390	208	190

4 System Planning Evidence

Q63. How has the updated Load Forecast and the additional information obtained from customers influenced BC Hydro's system planning in connection with the DCAT Project area?

A63. The load forecast is an integral part of determining whether BC Hydro's existing facilities are adequate to meet future conditions. The update to the load forecast has confirmed BC Hydro's previous assessment that the transmission system in the Dawson Creek area is not adequate to meet existing needs and will be seriously deficient as new load comes to the area.

Q64. Are there any characteristics of the updated load forecast that have influenced the assessment of system planning alternatives?

A64. The new forecast suggests that load can be expected to ramp up a little more slowly over the next two years and then rise to a higher and more sustained peak. Generally, this forecast makes a higher voltage, and more robust alternative more attractive. The preferred alternative put forward in the Application as the DCAT Project has these characteristics.

Q65. Have there been any other developments over the past 4 months that had the potential to materially affect the analysis in the System Planning Report?

A65. Yes. In February 2012, the Electricity Self Sufficiency Regulation and Special Direction No. 10 to the BCUC were modified to require BC Hydro to plan its system to be self-sufficient under average water conditions. Prior to these modifications, BC Hydro was required to plan to be self-sufficient under critical water conditions and to have insurance of 3,000 GWh of energy and associated capacity. This change has reduced the quantity of generation that the system requires which, in turn, has reduced the speed with which new generation will need to be brought onto the system. The result is a lower cost of system energy for planning purposes.

Q66. What is the relevance of the cost of energy when assessing transmission projects?

A66. The cost of firm energy is relevant to the calculation of the cost of transmission losses associated with any transmission solution. Generally speaking, the higher the voltage of the planned facilities, the lower their energy losses. Thus, a lower cost of energy will reduce the relative advantage of higher voltage solutions over lower voltage solutions.

Q67. How has the change in anticipated needs changed the cost of energy?

A67. BC Hydro's cost of firm energy changes depending on whether its system has surplus generating capacity or not. When there is no surplus capacity, its cost of firm energy is based on the cost of firm energy purchased from IPPs established under a competitive bidding process. As described in the Application, the weighted average of the levelized bid prices of the projects awarded at the conclusion of the Clean Power Call continues to be the best measure of that cost.

The levelized plant gate price from the Clean Power Call, in F2011$ is $116/MWh ($129/MWh adjusted for delivery to the Lower Mainland).

When the system does have surplus capacity, the cost of energy is the price at which energy can be sold into the market. For the purposes of the DCAT Project analysis, this value is estimated at $50/MWh in F2011$. Accordingly, this cost will be the appropriate measure for as long as the system remains in surplus condition.

Q68. When does BC Hydro anticipate its current surplus as determined under the revised regulations will be eliminated?

A68. BC Hydro's new forecast base case suggests the earliest that the surplus will be eliminated is F2017.

Q69. In light of these changes, what is BC Hydro's revised estimate of the cost of system firm energy?

A69. The cost of firm energy for evaluating losses is $50/MWh until F2017, and $116/MWh thereafter (F2011$).

Q70. Were these new values considered by BC Hydro in assessing whether the DCAT Project remained the preferred alternative to meet the growing load in the Dawson Creek/Groundbirch areas?

A70. Yes. Where losses were important to the assessment of an alternative these values were employed. They were also considered in the context of the evaluation of the generation alternatives.

Q71. Please elaborate on the steps BC Hydro took to consider alternatives other than the DCAT Project since the review process was temporarily suspended.

A71. BC Hydro considered alternatives that in its view served customer requests and meets the planning criteria. BC Hydro revisited the alternatives discussed in the Application to ensure that the DCAT Project as proposed continued to be the preferred means of enhancing the quality of service to customers in the DCAT Project area as well as providing service to new loads in the area.

In addition, a number of alternatives were identified during the information request process. Perhaps the most significant of these was the suggestion that the Dawson Creek load be served by local gas generation. BC Hydro has reviewed each of the alternative proposals identified in the information request process and has commissioned detailed analysis of the gas generation alternatives.

This review has confirmed BC Hydro's view that the DCAT Project is the preferred alternative.

Q72. Please describe each of the alternatives that you have considered in this reassessment.

A72. As in the Application, BC Hydro compared Alternative 1 to Alternative 2 over the 30-year system planning period. Alternative 1 is the 230 kV DCAT Project, required in F2014, plus a further F2016 upgrade configuration identified for evaluation purposes to meet requirements over the planning period, and sometimes referred to as GDAT. As a result, in this section when comparing alternatives, reference to the DCAT Project is meant to convey a comparison of alternatives over the 30-year planning period. Alternative 2 is a 138 kV solution followed by the GDAT reinforcement.

In addition BC Hydro compared the following supplemental alternatives over the planning period which fall into two general categories:

a) transmission solutions that aim to meet DCAT Project objectives through alternative facility configurations (labelled B1 to B5 below).

b) natural gas generation alternatives (labelled G1 and G2 below).

These supplemental alternatives may be described as follows:

c) Alternative B1: Configuration to build one new 230 kV substation at the point-of-interconnection for the Groundbirch customer and not build the proposed Sundance Substation (**SLS**).

d) Alternative B2: Configuration to integrate the DCAT Project with Wildmare Substation (**WDM**).

e) Alternative B3: Configuration to integrate the DCAT Project with Chetwynd Substation (**CWD**) and WDM without building SLS.

f) Alternative B4: Configuration to integrate the DCAT Project with WDM without building SLS, and maintaining CWD at 138 kV.

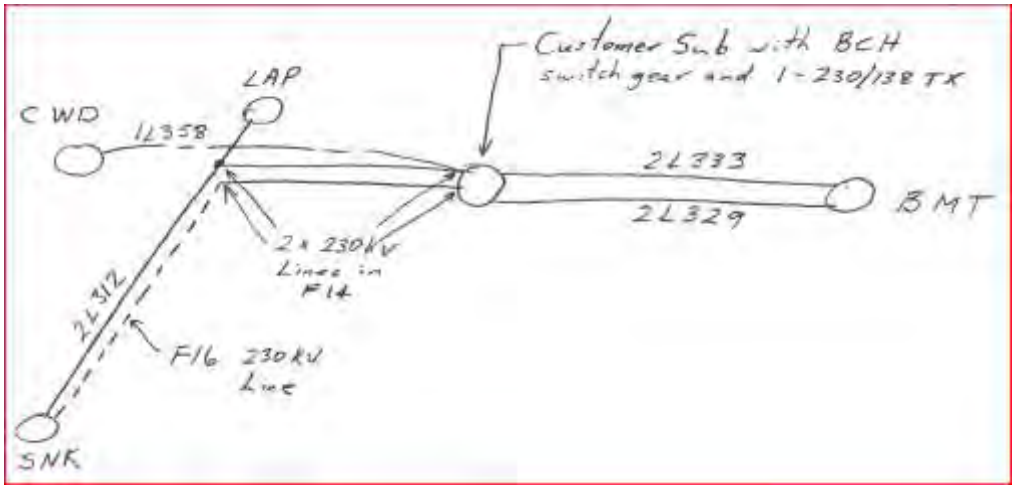
g) Alternative B5: Configuration to integrate the DCAT Project with WDM without building SLS, and maintaining CWD at 138 kV and 2L312.

h) Alternative G1: Interconnect 150 MW of natural gas generation in the Dawson Creek area and supply Groundbirch load from the 230 kV system.

i) Alternative G2: Interconnect 300 MW of natural gas generation in the Dawson Creek area and supply the Groundbirch load from the new generating station

A description of each alternative is set out below:

Alternative B1: Configuration to build one new 230 kV substation at the point-of-interconnection for the Groundbirch customer and not build the proposed SLS.



This alternative has the following requirements over the planning period:

a) Construct a new Groundbirch substation to accommodate the planned and future SLS facilities plus the Groundbirch customer requirements.

b) Construct two new 230 kV transmission lines as an extension of circuit 2L312 through to the new Groundbirch substation, without a termination at SLS. These lines would be similar to the requirements under the DCAT Project and

as such could use the developed routing. However, the transmission route through to Sukunka (**SNK**) would have to be determined.

c) Terminate 1L358 at the new Groundbirch substation by retaining an additional 20 km of 1L358 between the new Groundbirch substation and CWD.

d) In the F2016 Stage, construct a 230 kV transmission line from GM Shrum (**GMS**) to SNK to the junction of 2L312 and the new 230 kV transmission lines from F2014 and do one of the following:

   i. reconfigure the transmission system such that there are two 230 kV transmission lines from SNK to the Groundbirch substation with a tap to LAP on one of them; or

   ii. construct a 230 kV switching station at the junction.

e) Requirements at Bear Mountain Terminal (**BMT**) and Dawson Creek Substation (**DAW**), and other transmission elements would substantially remain the same as the proposed DCAT Project (Alternative 1)[1].

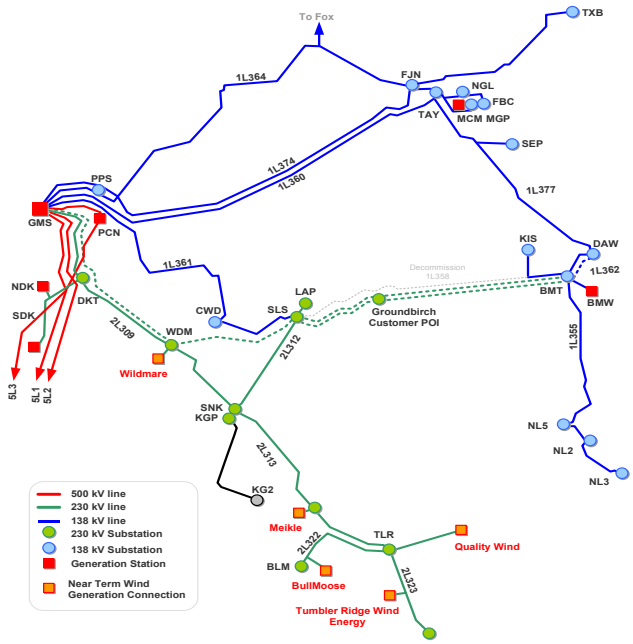
Requirements as compared to the DCAT Project:

a) The combined integration of SLS facilities with a new Groundbirch would likely result in fewer 230 kV circuit breakers.

b) The F2014 stage results in three transmission lines between the SLS site and the new Groundbirch substation (1 x 138 kV and 2 x 230 kV). The extra 20 km of 138 kV is not required under the DCAT Project (Alternative 1).

[1] Note re-examination of system elements such as telecommunication, protection and control would be required.

Alternative B2: Configuration to integrate DCAT Project with WDM.



This alternative is effectively testing a future upgrades scenario beyond the DCAT Project. It has the following requirements over the planning period:

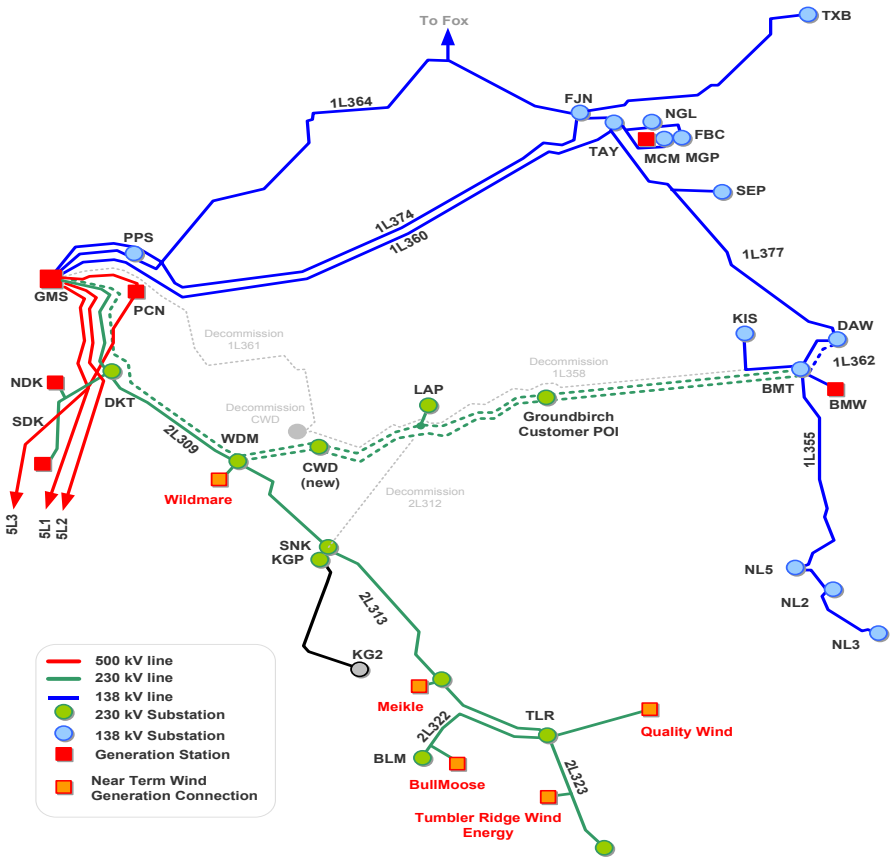
a) Requirements in the F2014 stage remain the same as the DCAT Project.

b) In the F2016 Stage, construct a 230 kV transmission line from GMS to WDM to SLS.

Requirements as compared to the DCAT Project:

a) Alternative B2 adds a new 230 kV line from GMS to WDM to SLS rather than a 230 kV line from GMS to SNK to SLS. Other requirements remain the same during the planning period as compared to the DCAT Project.

Alternative B3: Configuration to integrate the DCAT Project with CWD and WDM without building SLS.



This alternative has the following requirements over the planning period:

a) Convert CWD to a 230/25 kV substation with four 230 kV line terminals and distribution facilities (including transformers and a feeder section).

b) Construct a new Groundbirch substation to terminate 230 kV transmission lines and meet Groundbirch customer interconnection requirements.

c) Construct two new 230 kV transmission lines from WDM to CWD to the Groundbirch substation to BMT.

d) Construct a 230 kV tap (or three breaker station) to serve LAP.

e) Decommission existing CWD, 2L312, 1L358 and IL361.

f) In the F2016 Stage, construct a new 230 kV transmission line from GMS to WDM.

g) Requirements at BMT and DAW, and other transmission facilities, would remain substantially the same as the proposed DCAT Project (Alternative 1).

Requirements as compared to the DCAT Project:

a) New 230 kV CWD substation is not required in the DCAT Project. However, 230/138 kV transformation is required in the DCAT Project to connect the 138 kV and 230 kV systems together at SLS but it is not required in Alternative B3.

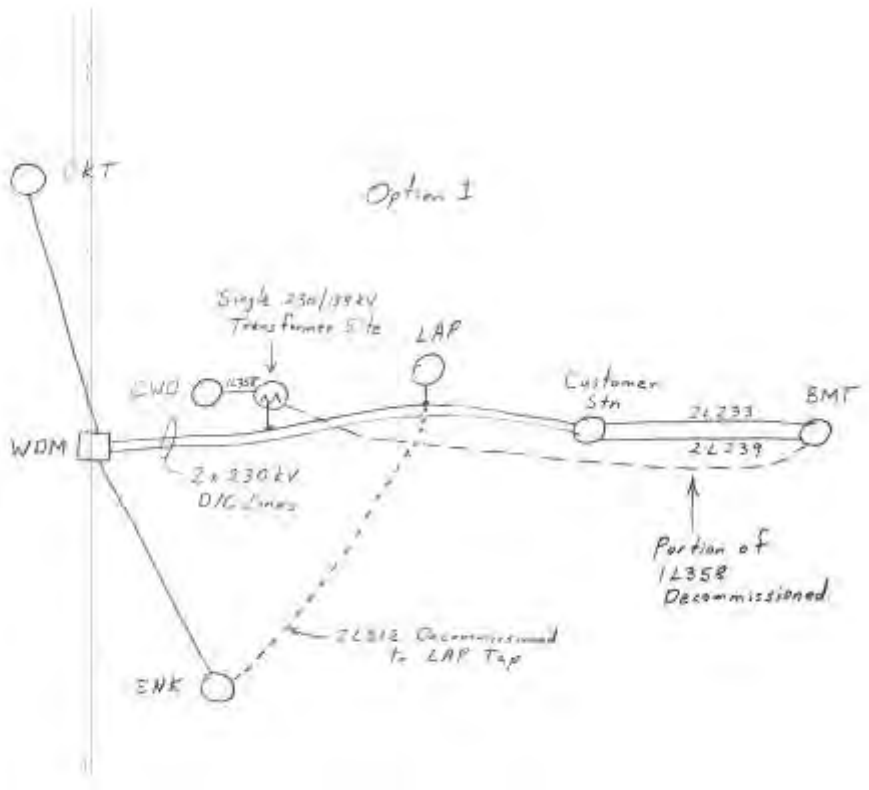
b) Alternative B3 extends the two new 230 kV lines from the Groundbirch substation beyond the proposed SLS under the DCAT Project on to CWD and WDM.

c) Decommissioning of existing CWD, 2L312 and IL361 are not required under the DCAT Project.

In F2016 rather than constructing a 230 kV line from GMS to SNK to SLS, Alternative B3 requires a line from GMS to WDM. Other requirements remain the same during the planning period as compared to the DCAT Project.

Alternative B3 is not a practical alternative because it removes a 138 kV transmission line which needs to be replaced shortly after the removal. With the loss of the new 230 kV transmission line between GMS and WDM, there is insufficient capacity to supply the load in the Tumbler Ridge, Chetwynd, Groundbirch and Dawson Creek areas by F2017 or F2018. In order to meet the load forecast, another transmission line would need to be constructed either between GMS and WDM or between Taylor Substation (**TAY**) and DAW.

Alternative B4: Configuration to integrate the DCAT Project with WDM without building SLS, and maintaining CWD at 138 kV.



This alternative has the same requirements as Alternative B3 with the following differences:

a) Maintain existing CWD at 138 kV and 1L361.

b) Construct a new substation near CWD which provides 230/138 kV transformation to connect the 138 kV and 230 kV systems together.

c) Maintain a portion of 1L358 between CWD and new substation.

Requirements as compared to the DCAT Project:

a) 230/138 kV transformation at a new substation is required in the DCAT Project and in Alternative B4. Alternative B4 suggests a 230 kV tap to connect the 230/138 kV substation to the 230 kV system rather than

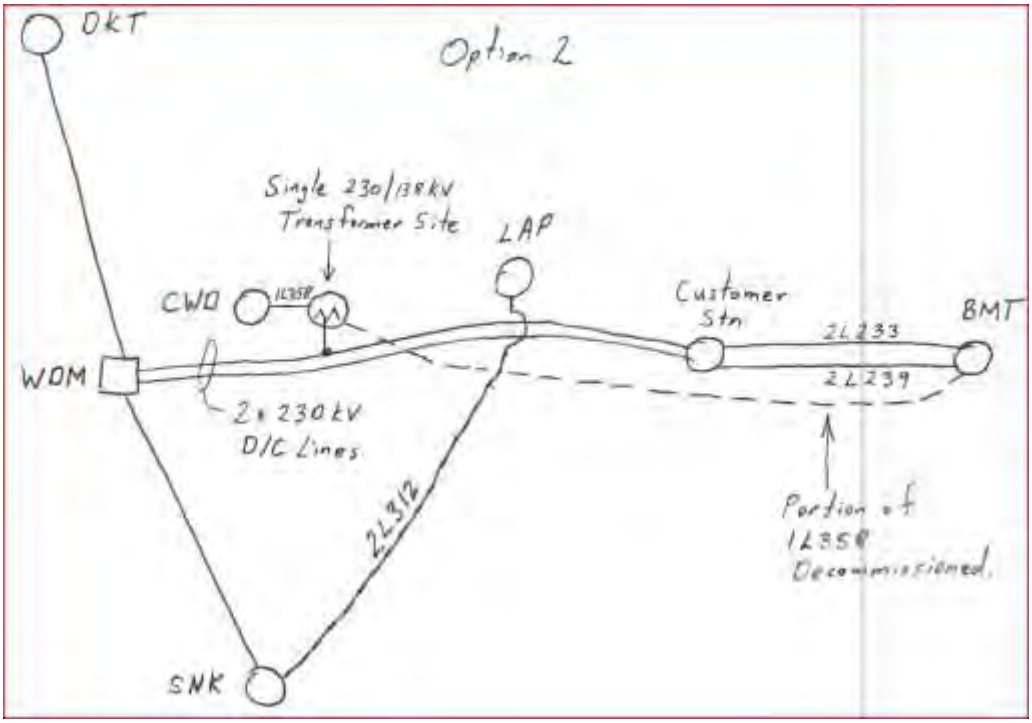
230 kV line terminations and transformation at SLS as proposed by the DCAT Project.

b) Alternative B4 extends the new two 230 kV lines from the Groundbirch substation beyond the proposed SLS under the DCAT Project on to WDM.

c) Decommissioning of existing 2L312 is not required under the DCAT Project.

d) In F2016 rather than a 230 kV line from GMS to SNK to SLS, Alternative B4 requires a line from GMS to WDM. Other requirements remain the same as the DCAT Project during the planning period.

Alternative B5: Configuration to integrate the DCAT Project with WDM without building SLS, maintaining CWD at 138 kV and 2L312.



This alternative has the same requirements as Alternative B4 with the following differences:

a) Maintain existing 2L312 to serve LAP rather than constructing a 230 kV tap.

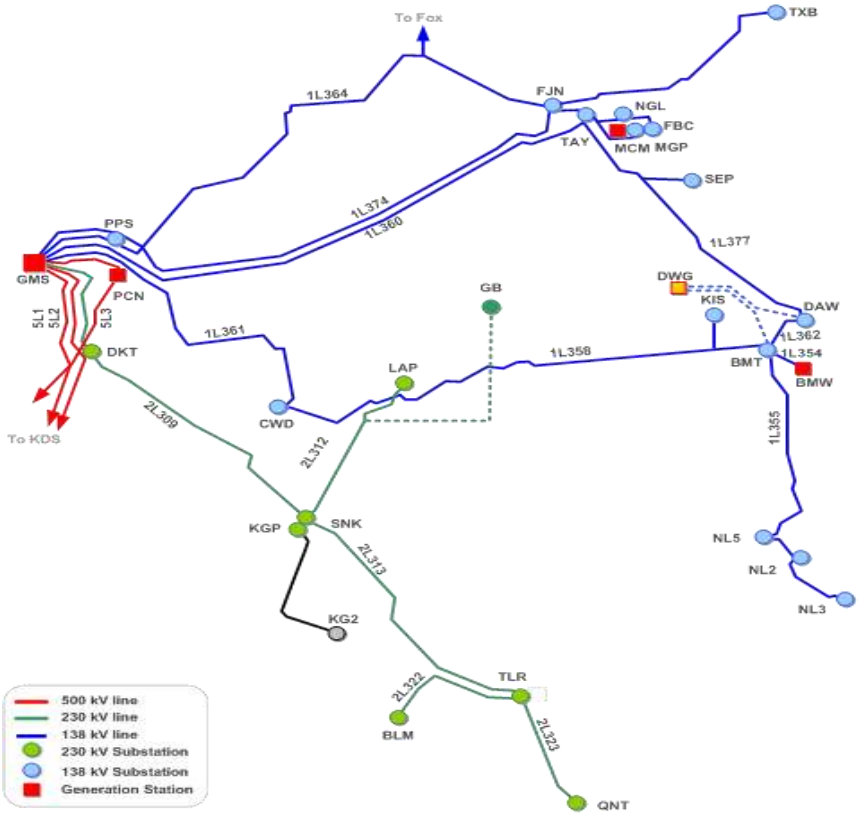
Requirements as compared to the DCAT Project:

a) 230/138 kV transformation at a new substation is required in the DCAT Project and in Alternative B5. Alternative B5 suggests a 230 kV tap to connect the 230/138 kV substation to the 230 kV system rather than 230 kV line terminations and transformation at SLS as proposed by the DCAT Project.

b) Alternative B5 extends the new two 230 kV lines from the Groundbirch substation beyond the proposed SLS under the DCAT Project on to WDM.

c) In F2016 rather than a 230 kV line from GMS to SNK to SLS, Alternative B5 requires a line from GMS to WDM. Other requirements remain the same as the DCAT Project during the planning period.

Alternative G1: Interconnect 150 MW of natural gas generation in the Dawson Creek area and supply Groundbirch load from the 230 kV system.



This alternative has the following requirements over the planning period:

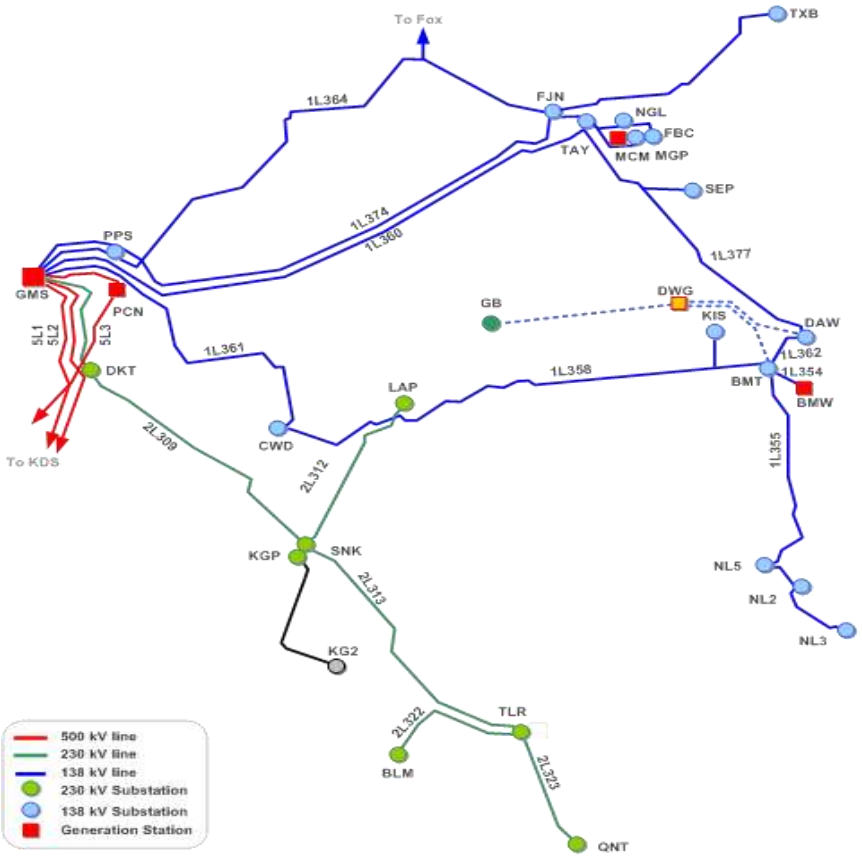
a) Construct 150 MW of new generation (three 50 MW CCGT units) at a new substation (**DWG**) near Dawson Creek.

b) Connect DWG to BMT and DAW with two 6 km 138 kV transmission lines.

c) The point of interconnection for the Groundbirch customer would be on 2L312.

Note, the updated load forecast indicates that the peak load in the Dawson Creek and Groundbirch areas has increased by 66 MW. Approximately 55 MW of this increase is expected to occur in the Dawson Creek area. As a result, an additional 55 MW of generation will be required at DWG.

Alternative G2: Interconnect 300 MW of natural gas generation in the Dawson Creek area and supply the Groundbirch load from the new generating station.



This alternative has the following requirements over the planning period:

a) Construct 300 MW of new generation (four 50 MW units and one 100 MW SCGT unit) at a new substation (**DWG**) near Dawson Creek.

b) Connect DWG to BMT and DAW with two 6 km 138 kV transmission lines.

c) Connect the Groundbirch customer to DWG.

With the updated load forecast, an additional 66 MW of generation will be required at DWG to supply the Dawson Creek and Groundbirch area peak load.

Q73. Please give an overview of the challenges that BC Hydro faces when comparing alternatives in the course of the planning process.

A73. The planning process, by its nature, must deal with the inherent uncertainty of future events. Accordingly, the planning process seeks to identify a solution using the most up to date information that is available when the study is undertaken and takes into consideration how changes, such as changes in the load forecast, could impact the selected solution when more up to date information becomes available. The preferred alternative (e.g., the DCAT Project) addresses a broad range of possible outcomes.

Q74. Bearing those challenges in mind, was BC Hydro able to compare the DCAT Project to the alternatives that were identified?

A74. Yes. However, the manner in which the comparisons were undertaken is not consistent across all alternatives. First, some alternatives, such as Alternative 2 in the Application, were relatively more developed and a more detailed comparison of costs and other attributes of the DCAT Project was possible. Other transmission alternatives were developed at an appropriate level for comparison, which was generally at a higher level and more qualitative. Finally, consideration of generation alternatives required assessment of additional factors not relevant to the transmission alternatives.

Q75. Please elaborate on the approach to the comparison of the DCAT Project as proposed with all the other alternatives you have considered or have been raised during the review process commencing with DCAT Alternative 2 as described in the Application

A75. Alternative 2 is compared to the DCAT Project in Appendix B of the Application at pages 50 to 57. Since the comparison was performed the changes in the load forecast and the cost of energy explained above have been considered.

Q76. What was the result?

A76. The financial analysis of the DCAT Project and Alternative 2 has been updated to consider the new cost of energy as described earlier. The analysis shows that with the updated cost of energy, Alternative 2 has approximately the same PV cost over the 30 year period as the DCAT Project. It should be noted that this analysis was done without taking into consideration the increased peak load from the updated load forecast. It is expected that with the updated Load Forecast, the transmission losses of Alternative 2 would increase more relative to the DCAT Project because losses on the 138 kV system would be higher. This would increase the PV cost of Alternative 2 relative to the DCAT Project.

With the updated load forecast, both Alternatives 1 and 2 may require additional system upgrades subsequent to the F2016 stage to meet the revised load forecast over the 30 year planning period. The additional system upgrades will be identified in the planning study for the F2016 stage. It is anticipated that the additional upgrades may be required in F2030 or F2031.

As compared to Alternative 2 the DCAT Project has greater reliability, is more capable of meeting a higher load forecast and provides flexibility to accommodate future load interconnections. Construction of Alternative 2 could not meet the required in-service date.

Q77. Has the DCAT Project been compared to the other transmission alternatives as described in Question 72 above?

A77. Yes. BC Hydro undertook a qualitative comparison of significant differences between the identified alternatives and the DCAT Project, as included below at Questions 78 to 81 and summarized at Question 91. BC Hydro continues to believe that the DCAT Project remains the preferred alternative and proposed project for a CPCN.

Q78. How does the DCAT Project compare to the alternative B1 as it is described in Q72(c) above?

A78. Alternative B1 differs from the DCAT Project in that it proposes to minimize station requirements in the area by moving the transmission system requirements of SLS to the anticipated point of interconnection (**POI**) of the Groundbirch customer. The substation proposed in Alternative B1 would provide the 230/138 kV transformation and act as the POI for the Groundbirch customer.

The combined station as proposed would likely have some capital cost saving as compared to the DCAT Project, due to the marginal reduction in station facilities. However, transmission losses for Alternative B1 are expected to be greater compared to the DCAT Project as 20 km of 1L358 must remain in service that would be removed in the DCAT Project. The PV cost including losses is expected to be marginally lower than the DCAT Project.

This alternative was rejected at the planning stage because BC Hydro was not able to obtain sufficient information from the customer in the Groundbirch area about the location of new loads to allow it to locate a site for a single substation. A two substation configuration, albeit more costly at the outset, allows greater ability to react to the actual location of loads when known. While BC Hydro has enhanced knowledge of the likely location of some of the loads now, uncertainty remains. A significant amount of work has occurred to identify a potential substation location for the Groundbirch POI. There is a

high likelihood the identified site may not be able to accommodate the SLS facilities. In addition, changes to the siting of the substations would delay the in-service date of the DCAT Project and the Groundbirch load interconnection.

Further, the footprint of the proposed Alternative B1 is greater that the DCAT Project. A potential reduction in property requirements from constructing one large substation does not offset the area that remains encumbered by retaining an additional 20 km of 1L358.

Not building SLS also has other technical impacts. Transmission system reliability is lower in Alternative B1 as compared to the DCAT Project because only one substation would be built. Service to LAP would not be as robust under a single tap configuration as proposed in the F2016 stage. This will result in uneven loading on 2L312 and the future second line between SNK and the new substation. With the loss of one of these lines, the remaining line may overload. Studies such as protection and control and transient studies would need to be completed to confirm the feasibility of tapping LAP to a 230 kV line. A 230 kV switching station may be required at the SLS site, which would defeat the purpose of this alternative.

Given that the F2016 Stage requirements for this alternative are similar to the F2016 Stage for the DCAT Project, it is anticipated that addition system upgrades may be needed for this alternative in F2030 or F2031 as well. Further, removing SLS reduces BC Hydro's flexibility to serve future load growth in the Chetwynd area.

Accordingly, BC Hydro believes its original assessment to build SLS remains appropriate.

Q79. How does the DCAT Project compare to the proposed Alternative B2 as described in Q72(d) above:

A79. Alternative B2 does not differ from the DCAT Project, regarding the facilities to be built in F2014. It differs in proposing an alternative to future upgrades anticipated in the F2016 timeframe for a potentially lower cost GDAT project. The study for the F2016 stage is still ongoing and will determine the most appropriate solution to implement in F2016. This alternative, which suggests a future 230 kV transmission line from GMS to the anticipated WDM to SLS rather than a line from GMS to SNK to SLS, will be given further consideration at that time. The approach suggested would require new ROW from WDM to SLS, but would not require new or widened ROW from WDM to SNK to SLS.

Given that the F2016 Stage capabilities for this alternative are similar to the F2016 Stage for the DCAT Project, it is anticipated that additional system upgrades may be needed for this alternative in F2030 or F2031 as well.

Q80. How does the DCAT Project compare to the proposed Alternative B3 as described in Q72(e) above?

A80. Alternative B3 is not a feasible approach. As compared to the DCAT Project, Alternative B3 removes significant existing 138 kV and 230 kV transmission system facilities, which results in a near term capacity shortfall. Alternative B3 significantly advances the need to implement an additional system reinforcement immediately following both the F2014 and F2016 stages. In particular a new transmission line would need to be built between GMS and the anticipated WDM or between TAY and DAW to resolve the shortfall in capacity created by the removal of the 138 kV line supplying CWD from GMS. The DCAT Project (plus the F2016 Stage) would not require further reinforcement until approximately F2030 or F2031 (to be confirmed in the F2016 Stage study).

Further, the 138/25 kV transformers at CWD were recently replaced in 2008 with new transformers making conversion from 138 kV to 230 kV unattractive

as suggested by this alternative. The load growth on the distribution system at CWD does not indicate a need to expand to a higher capacity station at this time.

Q81. How does the DCAT Project compare to Alternatives B4 and B5 as described in Q72(f) and (g) above?

A81. Alternatives B4 and B5 differ significantly from the DCAT Project in that they propose to terminate the new 230 kV lines from BMT at the anticipated WDM rather than construct and terminate at SLS. However, construction of a new station near CWD would be required. There is a high likelihood that tapping the new station to the 230 kV system as proposed in this alternative may not be feasible. Therefore, the new station near CWD would need to be connected to the system in a similar manner as SLS, with similar requirements and functionality.

Order of magnitude cost estimates for Alternative B4 and B5 are expected to be higher than the cost estimate for the DCAT Project. The PV cost of the DCAT Project is also expected to be lower than the PV cost of either Alternative B4 or B5.

Alternatives B4 and B5 require an additional 30 km of new 230 kV double circuit transmission line and additional ROW in the F2014 timeframe as compared to the DCAT Project. Less ROW is required for future required upgrades.

Construction of the extra facilities required for Alternative B4 and B5 could not meet the required in-service date of the DCAT Project. Further, implementation would be contingent on timely completion of WDM currently scheduled for July 2014 (subject to change). The DCAT Project is not dependant on completion of the WDM.

Overall, Alternatives B4 and B5 provide a lower level of reliability compared to the DCAT Project (with consideration of F2016 upgrades). In particular, reliability of supply to LAP and the Tumbler Ridge region is lower under the proposed alternative.

Given that the F2016 Stage capabilities for these alternatives are similar to the F2016 Stage for the DCAT Project, it is anticipated that addition system upgrades may be needed for these alternatives in F2030 or F2031 as well.

The DCAT Project remains the recommended solution as compared to Alternatives B4 and B5.

Q82. How does the DCAT Project compare to the local gas generation projects alternatives you have considered?

A82. Any local gas generation alternative would have some characteristics that are distinct form the transmission solution found in the DCAT Project or the transmission alternatives discussed above. The responses below address those general issues first before considering the specifics of Alternatives G1 and G2.

Q83. Why does BC Hydro prefer not to use local gas-fired generation to meet loads in relatively small transmission-constrained regions such as the Dawson Creek area?

A83. In a transmission-constrained region, such as the Dawson Creek area, adding local gas-fired generation would require the installation of relatively small units (e.g., 50 to 75 MW) in order to have redundancy such that an acceptable level of reliability can be achieved. Such redundancy is required to allow for both planned outages (maintenance) and unplanned outages (breakdowns) of generating units. The use of small gas-fired units, even if configured as combined cycle gas turbines or CCGT will lead to cost inefficiencies relative to larger unit sizes because of higher unit capital costs (e.g., typically $3000/kW for 50 MW CCGT vs. $1450/kW for 250 MW CCGT),

and higher operating costs associated with the additional maintenance required for multiple unit configurations. There will also be operational inefficiencies for the smaller CCGT units since they have generally lower thermal efficiencies (higher heat rates) compared to the larger units. There may be further inefficiencies (e.g., operation at partial unit loadings and uneconomic dispatch) associated with the need for "reliability must run" operation of the local units in order to ensure an acceptable level of reliability is maintained.

The cost premium associated with the local generation options for the Dawson Creek area has been assessed in Question 89 below and the conclusion is that it would be more cost effective to proceed with the DCAT transmission upgrade with capacity and energy supplied from generation added the BC Hydro integrated system (notionally a 250 MW CCGT unit).

A further problem with using local gas-fired generation in areas, such as the Dawson Creek area, is that the option value for potential development of gas turbine peaking generation to meet future system capacity needs will be diminished due to the overall restrictions on the permissible volumes of gas-fired generation imposed by the *Clean Energy Act*. Some discussion of this issue is included in Questions 87 and 90 below, and BC Hydro's Integrate Resource Plan (**IRP**) will address the issue in more detail.

Q84. What are the principal characteristics of natural gas-fired generation resources?

A84. The majority of utility-scale gas generators can be grouped into two main categories.

Simple Cycle Gas Turbines (**SCGT**) have relatively low capital cost, but are less efficient than other types of gas generation. SCGT units are typically used as a source of peaking capacity, since the units are capable of fast start-up (e.g., SCGT units can reach full output from a cold start in less than

ten minutes). The units also have good output ramping characteristics and, once on-line, can provide load following, reliability back-up, and voltage regulation. The capital cost of a 100 MW SCGT unit is estimated to be around $95 million or a unit capital cost of $950/kW.[2] Except in cases where peaking operations are necessary, SCGT units would generally operate in second priority to CCGT units because the former have lower thermal efficiency.

Combined Cycle Gas Turbines (**CCGT**) utilize an additional cycle to supplement gas turbine generation with output obtained from the exhaust heat from the gas turbine. This exhaust heat generates steam in a heat recovery boiler and is used to operate a steam turbine. CCGTs are more efficient than SCGTs, but have higher capital costs. CCGTs are typically built in instances where there is a need for both firm energy and dependable capacity (e.g., when either base-load or "reliability must run" operations are required). CCGTs have longer start up times (e.g., approximately 40 minutes to reach full output) and have lower ramping rates than SCGTs, however they are capable of providing some load following and system regulation.

The capital cost of a single 50 MW CCGT is estimated to be around $150 million which represents a unit installed cost of $3000/kW.[3] This is considered a conservative estimate based on a "one-on-one" configuration of a single 40 MW gas turbine a single 10 MW steam turbine. Some economies could be achievable for configurations where multiple gas turbines supply one large steam turbine.[4]

Larger CCGT units (e.g., a 250 MW unit) have significantly lower unit capital costs, typically in the range of $1200-1500/kW.

[2] Based on data in BC Hydro's 2010 Resource Options Report for a 100 MW SCGT unit.

[3] Based on data in BC Hydro's 2010 Resource Options Report for a 50 MW CCGT unit.

[4] For example, a 160 MW CCGT "three-on-one" arrangement comprising 3-40 MW gas turbines and 1-40 MW gas turbine would likely have somewhat lower unit capital costs. However, BC Hydro's current Resource Options planning data does not include specific information on such configurations.

Q85. What are the general characteristics of local generation resources required to move load serving capability from N-0 to N-1?

A85. The current Dawson Creek area system has N-0 and N-1 load carrying capabilities of 150 and 70 MW respectively (i.e., the loss of the largest transmission element would cause a capacity reduction of 80 MW). As shown in the Load Forecast section above, the projected peak loads for the DCAT Project area under the 2010 base forecast would be 320 MW by F2017 and 359 MW by F2027. To meet these loads assuming N-0 conditions (i.e., with all transmission and generation components in-service) would require approximately 210 MW of new local generation. To meet these load levels under N-1 conditions (i.e., with largest single transmission or generation component out of service) would require approximately 80 MW of incremental new local generation, assuming no single unit is larger than 80 MW (the current N-1 contingency). Such incremental generation would likely be one or more SCGT units, capable of fast start to prevent load shedding in the event of a single contingency outage of another transmission component or generation unit.

Q86. What are the characteristics of local generation resources to the meet the N-0 criterion?

A86. As discussed in Question 85 above, the difference in local generation requirements to meet an N-0 reliability as opposed to an N-1 reliability on the DCAT system is approximately 80 MW. It is likely that the N-0 reliability would be met primarily by new CCGT base-load units operating as “reliability must run” (**RMR**). CCGT units would be preferred over SCGT units in order to minimize production costs. As discussed above, the incremental N-1 requirement would likely be met by SCGT due to fast start capability.[5]

A distinction is made between the N-0 reliability for gas generation compared to that of a single radial transmission line. Assuming the former comprises

[5] The SCGT units may also be required to operate as RMR under some load conditions.

multiple units, a single contingency outage (N-1) would result in only partial load interruption; whereas an N-1 contingency of a radial line would result in total load interruption.

Q87. What are the limits on gas-fired generation imposed by the *Clean Energy Act* (*CEA*)?

A87. The *CEA* sets out the following British Columbia Energy Objectives relevant to the role of gas generation:

a) "to generate at least 93 per cent of the electricity in British Columbia from clean or renewable resources…"
b) to reduce B.C. GHG emissions
c) to encourage energy efficiency and clean or renewable electricity through:
    i. innovative technology s.2(d);
    ii. community actions s.2(i);
    iii. use of waste heat, biomass or biogas s.2(j); and
    iv. First Nations and rural development s.2(l)

BC Hydro currently has five gas-fired generation sources in its system[6]:

a) Burrard Thermal[7],
b) Fort Nelson Generating Station,
c) Prince Rupert Generator,
d) Island Generation Project (IPP), and]
e) McMahon Cogeneration Plant (IPP).

These facilities contribute 3,500 GWh of firm energy capability to the system, and account for more than 5 per cent of the of space currently available for gas-fired generation under the 93 per cent clean or renewable target. Thus, very little space is left for developing additional gas-fired generation. The following table sets out the maximum number of GWh of new gas-fired generation that could be built assuming the 2011 load forecast with Kitimat

[6] BC Hydro also operates several small diesel generators. Because of the small energy volumes involved, their impact on the 93 per cent clean target is relatively minor and has been ignored.

[7] No energy is assumed for Burrard Thermal for planning purposes, hence it does not factor into this analysis.

LNG, and assuming that the system is at load resource balance. The table also shows the number of MW of gas-fired generation that could be built. Two scenarios are shown. One is a scenario in which the new gas-fired generation is built for capacity and generates only sparingly for peaking purposes. The number of MW in this case assumes that the average capacity factor of the peaking gas plants would be around 18 per cent. If the new gas-fired generation is built to provide base load energy, as would be the case of gas-fired CCGT generation in the Dawson Creek area, the MW that could be installed would be much less. The numbers shown in the table for this scenario assume that the base load gas-fired generation would operate at a 90 per cent capacity factor.

Table 2 Determination of Permissible Gas-fired Generation

Year	F2014	F2016	F2020	F2030
Space available for gas generation (7% of total generation energy requirements)	4,100	4,300	4,800	5,200
Energy contribution from existing gas-fired generation (GWh)	3,500	3,500	3,500	3,500
Volume of new gas-fired generation that could be built (GWh/year)	600	800	1300	1700
Permissible MW of gas fired generation if built for capacity	400	500	800	1100
Permissible MW of gas fired generation if built for base load energy	100	100	200	200

Q88. Did you consider the specific alternatives you have described as alternatives G1 and G2 in the context of these general attributes?

A88. Yes, developmental and technical issues for Alternatives G1 and G2 are discussed below.

i. Timing and Siting Issues

BC Hydro's Resource Options planning data indicates that the lead times (definition plus implementation phases) for new CCGT or SCGT generation would be five years. Assuming an October 2012 start, these lead times imply

nominal earliest in-service dates of October 2017 (F2018) for new gas generation, which is four years beyond the target in-service date for the DCAT Project (2014 Stage). While it may be possible to shorten the lead times for gas generation somewhat with expedited planning and approvals, for the purpose of this analysis, it is assumed that lead times could be reduced to three years for SCGT and four years for CCGT. However, even with reduced lead times, the earliest practical in-service dates would be October 2015 (F2016) for SCGT, and October 2016 (F2017) for CCGT. Thus, the gas alternatives could not meet the expected Dawson Creek area load growth in the near term to the same degree as the DCAT Project transmission (i.e., there would be significant load service shortfalls in years F2016 and F2017 which would not occur with the DCAT Project alternative).

ii. Technical Analysis and Reliability

As discussed above, new gas generation could be added to the Dawson Creek area transmission system based on meeting the N-1 reliability standard for the portion of the load served from Dawson Creek.

For Alternative G1, the N-1 load carrying capability of the system would be approximately 220 MW (70 MW for existing transmission plus 150 MW from new CCGTs). This represents the maximum load that could be served in the Dawson Creek Area at N-1 reliability. The balance of the Dawson Creek area load (i.e., the Groundbirch load), which is forecast to be approximately 140 MW by F2027, would be served at N-0 reliability via existing 230 kV transmission as discussed above.

For Alternative G2, the N-1 load carrying capability of the system would be approximately 350 MW (150 MW for existing Dawson Creek area transmission, plus 200 MW from new CCGTs). No contribution from the new 100 MW SCGT would be included since it would become the largest single

contingency for the system. The N-1 capability of Alternative G2 is sufficient to allow the entire Dawson Creek area load to be served at N-1 reliability.

The above results for Alternative sG1 and G2 are summarized in the following tables:

Table 3 N-0 Capacity (MW) of Generation Alternatives

	CCGT	SCGT	Area Transmission	Total Capacity
Alternative 1	150	0	150	300
Alternative 2	200	100	150	450

Table 4 N-1 Capacity (MW) of Generation Alternatives

	CCGT	SCGT	Area Transmission	Total Capacity
Alternative 1	150	0	**70**[8]	220
Alternative 2	200	**0**[9]	150	350

For both Alternatives G1 and G2, the CCGT generation would be assumed to operate as RMR in order to minimize service interruptions in the DC area. Any energy generation that would be surplus to the DC area load as a result of the RMR operation, would be exported out of the region via the existing 138 kV transmission system.

The technical feasibility of these alternatives will be confirmed in the system impact study as part of the generation interconnection process. Additional upgrades may be required that would add costs to Alternatives G1 and G2.

The following studies have been completed to assess the technical attributes of the two generation alternatives.

[8] The 80 MW transmission outage on the existing Dawson Creek area transmission system is the largest single contingency.

[9] The 100 MW outage of the new SCGT would become the largest single contingency for DC Area.

Transmission Losses - The table below shows the results of studies to assess the area transmission line losses for each gas alternative. The DCAT Project 230 kV transmission losses are also shown:

Table 5 Annual Transmission System Losses (GWh/year)

	F2016	F2020	F2025	F2027	F2030	F2035	F2041
G1	94	115	137	144	121	93	78
G2	64	79	99	108	89	74	83
DCAT	128	149	171	178	155	121	101

The transmission losses were calculated based on the 2010 Dawson Creek area load forecast with 150 MW of gas generation for Alternative G1 and 300 MW of gas generation for alternative G2. This was done to provide a reasonable comparison of transmission losses to the DCAT Project. Compared to the DCAT Project, the transmission losses for the generation alternatives are lower.

Reliability - The table below shows the results of studies to assess the expected energy not served (**EENS**) indices for the Peace region for each gas generation alternative. The DCAT Project EENS values are also shown

Table 6 Annual Expected Energy Not Served (EENS) in MWh/year

	F2016	F2020	F2025	F2027	F2030	F2035	F2041
Alt1	2709	2908	3095	3131	3053	2708	2431
Alt2	1728	1790	1813	1822	1805	1777	1768
DCAT	1194	1343	1503	1666	1509	1362	1348

The EENS values were calculated based on the 2010 Dawson Creek area load forecast with 150 MW of generation for Alternative G1 and 300 MW of generation for Alternative G2.

The EENS values for Alternatives G1 and G1 are greater than the EENS for the DCAT Project. This means the DCAT Project provides greater system

reliability than either generation alternative. Also, the EENS values for Alternative G1 are higher than those for Alternative G2, reflecting the fact that the former provides a lower quality of service due to the Groundbirch portion of the load being served with N-0 reliability.

Q89. What is the cost of using local natural-gas fired generation to meet the Dawson Creek area load?

A89. A preliminary economic assessment of the PV costs of using gas generation to meet the Dawson Creek area load has been conducted based on the following assumptions:

- Gas generation cost and performance data are as per the BC Hydro 2010 Resource Options data for 50 MW CCGT and 100 MW SCGT units.
- Energy production costs are based on the units running at nominal design annual capacity factors (90 per cent for CCGT and 18 per cent for SCGT).
- Gas market prices are based on BC Hydro's most recent forecast for the "mid" and "low" scenarios. The mid and low scenarios represent levelized gas prices of approximately $7/GJ and $5/GJ, respectively, both referenced to Station 2.
- Allowances for GHG offset costs are included per BC Hydro forecast data.
- Dependable capacity is credited at the unit capacity cost of Revelstoke Unit 6.
- Preliminary allowances for generation interconnection costs to the Dawson Creek area are included.

- Evaluation of area transmission losses is included based on Mid C market prices prior to system need, and the firm energy cost of new clean energy resources after system need.[10]
- The in-service date for local gas generation is assumed as F2016 and the cost evaluation period is 30 years (F2012 to F2041) to align with the planning period.[11]

Results of the PV cost analysis for the two gas generation alternatives are presented in the following tables:

Table 7 PV Cost Analysis

Alternative G1 - PV Costs ($M 2012)

Market Scenario	mid	low
	1	2
Fixed Costs	$536	$536
Cost of Energy	$1,155	$803
Interconnection	$12	$12
Losses and Capacity Adjust	$54	$53
Total	$1,757	$1,404

Alternative G2 - PV Costs ($M 2012)

Market Scenario	mid	low
	1	2
Fixed Costs	$808	$808
Cost of Energy	$1,718	$1,189
Interconnection	$12	$12
Losses and Capacity Adjust	-$78	-$78
Total	$2,460	$1,930

[10] As noted earlier, the firm energy cost for new clean resources is taken as $116/MWh ($ 2011) which is the average plant gate price for IPP projects located in Peace River region under the Clean Power Call.

[11] As discussed above, the in-service date of F2016 would not be not achievable for CCGT generation. However, a simplifying assumption of F2016 assumption is adopted for the PV cost calculations to avoid the complexity of trying to evaluate the cost of near term DC area load service shortfalls.

Comparable PV costs for combined generation and transmission scenarios with the DCAT Project have been developed based on assuming equivalent gas generation volumes sourced from a single CCGT resource located on the integrated system in the Kelly-Nicola region. Key assumptions in this analysis were as follows:

- The capacity of the CCGT resource is 250 MW with cost and performance data as per BC Hydro's 2010 Resource Options Report.
- Capital and fixed operating costs for the 250 MW CCGT are allocated to DCAT scenarios one and two in proportion to the amount of gas generation capacity in Alternatives G1 and G2, respectively.
- Variable operating costs (e.g., fuel, GHG costs, variable maintenance) for the 250 CCGT output are allocated to DCAT Scenarios 1 and in proportion to the amount of gas generation energy output assumed for Alternatives G1 and G2 respectively.
- The assumed 250 MW CCGT in-service dates in each DCAT Scenario is F2017 to match the current timing for new resource need on the Integrated System.
- Prior to CCGT in-service, the Dawson Creek area need is assumed to be met by Mid-C market purchases.
- Adjustments for the value of capacity and cost of transmission losses are made as per the gas generation alternatives.
- Capital and operating costs for the DCAT Project are included for the F2014 and F2016 stages. DCAT Project capital costs have been adjusted to include an 18 per cent contingency allowance to ensure consistent comparison between generation and transmission capital costs.[12]

The resulting PV costs for the DCAT Scenarios are shown in the following tables.

[12] BC Hydro's Resource Options data includes a 20 per cent capital cost contingency for gas generation.

Table 8 Combined Generation and Transmission Scenarios

DCAT Scenario 1 - PV Costs ($M 2012)

Market Scenario	mid	low
	1	2
CCGT Fixed Costs	$207	$207
Cost of Energy	$1,108	$761
DCAT Costs	$289	$289
Losses and Capacity Adjust	$60	$58
Total	$1,664	$1,316

DCAT Scenario 2 - PV Costs ($M 2012)

Market Scenario	mid	low
	1	2
CCGT Fixed Costs	$333	$333
Cost of Energy	$1,626	$1,118
DCAT Costs	$289	$289
Losses and Capacity Adjust	-$15	-$17
Total	$2,233	$1,723

The cost effectiveness of each alternative G1 and G2 relative to the corresponding DCAT Project scenario was measured by taking differences in the total PV costs shown in the above tables. The results are shown below:

Table 9 Comparison Summary

Summary of PV Cost Differences ($M 2012) (Gas Alternative Cost - DCAT Scenario Cost)		
	mid	low
	1	2
Alt. G1 vs. DCAT Scen. 1	$93	$88
Alt. G2 vs. DCAT Scen. 2	$227	$207

The results show that the DCAT Project Scenarios will be more cost effective than the gas alternatives. The differences are more pronounced for alternative G2 vs. DCAT Scenario 2.

Under the 2011 load forecast for the Dawson Creek Area, which is higher than the 2010 forecast as discussed in the Load Forecast section, it is expected that the PV differences shown above would further increase in favour of the DCAT Project. The principal reason is that expanding the Dawson Creek area local gas generation with more 50 MW CCGT units and/or 100 MW SCGT units would not be as cost effective as expanding supply on the BC Hydro integrated system.

Q90. Are there other higher value opportunities to use the limited quantity of gas-fired generation available to BC Hydro?

A90. Yes. BC Hydro has almost used up all of its low cost hydro peaking capacity units. Revelstoke 5 is in-service and Mica units 5 and 6 currently being built. Revelstoke unit 6 and Site C are the only available large scale hydro units that BC Hydro could develop. Pumped storage hydro units would be BC Hydro's principal source of new clean capacity, but such projects have never been permitted and developed in British Columbia and BC Hydro is aware of only one pumped storage facility that has been developed in Canada (in the 1950s). This creates significant uncertainties around the permitting process and development timelines. Pumped storage hydro would

be substantially more expensive than the Mica/Revelstoke units (e.g., pumped storage plants are estimated to have unit capacity costs of the order of $100/kW-year and will incur substantial energy losses of approximately 30 per cent on each pump/generate cycle).

Capacity from gas-fired SCGT units may be an attractive source of capacity in situations where no other cost effective, clean option is available. As evidenced by Table 2 in Question 87 above, using SCGT units to provide peaking capacity, as opposed to using CCGT units to provide base-load energy, may allow BC Hydro to rely on a significant quantity of capacity within the confines of the energy volume available under the 93 per cent clean or renewable target imposed by the *CEA*.

Instances where BC Hydro may be able to maximize the capacity benefits of the limited volume available for new gas fired generation include:

(1) North Coast Region - The electricity demand in the North Coast region is expected to increase significantly, primarily due to the anticipated development of several LNG export facilities near Kitimat. The region is currently interconnected to the rest of the BC Hydro system by a single 500 kV circuit that would not be capable of transferring sufficient electricity to serve all of the anticipated new loads. Developing a new 500 kV transmission line is estimated to take approximately eight years, and would have high capital costs and significant permitting risks. In comparison to building a new transmission line and adding more generating capacity units at other locations on the integrated system (e.g., pumped storage in the Lower Mainland/Vancouver Island (**LM/VI**) region), gas-fired SCGT generation may be the most practical option to meet the increased North Coast loads in a timely manner. Installation of SCGT units in the North Coast may also be more cost effective than the alternative of constructing a new 500 kV

transmission line and providing pumped storage generating capacity elsewhere on the system. The SCGT units would be operated as peaking units allowing compliance with the 93 per cent clean energy target.

(2) LM/VI Contingency Planning - BC Hydro is also developing Contingency Resource Plans (**CRP**) to respond to events such as load growth being higher than expected or DSM capacity savings being lower than expected. As with the North Coast situation, adding gas-fired SCGT generation appears to be the most practical near term option for providing a reliable source of capacity supply to the LM/VI region to cover contingency situations (such as, ILM transmission project deferrals or delays). The LM/VI region accounts for approximately 70 per cent of BC Hydro system load. Only around 27 per cent of the peak LM/VI load can be met by resources within the region. Developing alternative sources of capacity in LM/VI, such as pumped storage facilities, would require a lead time of the order of eight to ten years for permitting and construction. Further, the development risk for pumped storage projects is judged to be “high” given the significant environmental footprints of these projects and the fact that only one pumped storage unit has ever been built in Canada as noted earlier. By contrast, the lead time for developing new SCGT generation in or near the LM/VI region would be shorter (i.e., of the order of 5 years). Permitting challenges for SCGT are also likely to be less onerous, provided appropriate sites are chosen. Therefore, new SCGT units may be the only viable, near-term solution that could provide a reliable source of dependable capacity to the LM/VI region to meet contingency planning requirements.

Assessment of benefits of using SCGT to meet future capacity needs on the BC Hydro system will be examined in BC Hydro's IRP, including more fulsome consideration of the significant cost and development risks associated with pumped storage projects. At this stage, it would appear premature to commit the limited volume of gas generation permitted under the *CEA* to local generation options that would avoid the DCAT project and which would preclude meeting potential future system capacity needs with SCGT generation. This is especially true since the use of local SCGT/CCGT generation to avoid the DCAT project does not appear to show any cost saving advantage.

Q91. Can you summarize the comparison of the alternatives?

A91. Yes.

Table 10 summarizes a comparison of alternatives. It highlights the significant differences between alternatives as compared to the DCAT Project.

Table 10 Comparison Summary

Alternative	Direct Capital Cost	Transmission Losses	PV Cost (including losses O&M and taxes)	Reliability	Right-of-Way and Property Requirements	Earliest In-Service Date (Initial Phase)
DCAT Project Alternative 1 (DCAT 1)	Base	Base	Base	Base	Requires new substation site and new and widened ROW	Early F2015
Alternative 2 (DCAT 2)	Lower than DCAT 1	Higher than DCAT 1	Same as* DCAT 1	Lower than DCAT 1	Similar to DCAT 1	F2016
B1 – No SLS	Lower than DCAT 1	Higher than DCAT 1	Lower than DCAT 1	Lower than DCAT 1	Similar to DCAT 1	Late F2015
B2 – WDM with SLS	Lower than DCAT 1	Similar to DCAT 1	Lower than DCAT 1	Similar to DCAT 1	Same as DCAT 1 plus additional substation expansion. Less new and widened ROW in Phase 2.	Early F2015
B3 – WDM w/o SLS	Not a feasible alternative					
B4 – WDM with LAP tap	Higher than DCAT 1	Similar to DCAT 1	Higher than DCAT 1	Lower than DCAT 1	Similar to B2 (but note decommissioning)	F2017
B5 – WDM with LAP radial	Higher than DCAT 1	Similar to DCAT 1	Higher than DCAT 1	Lower than DCAT 1	Similar to B2 but additional ROW required for initial build.	F2017
G1	Higher than DCAT 1	Lower than DCAT 1	Higher than DCAT 1	Lower than DCAT 1	Requires one generation site and some new ROW	F2016 to F2018
G2	Higher than DCAT 1	Lower than DCAT 1	Higher than DCAT 1	Lower than DCAT 1	Requires one generation site and some new ROW	F2016 to F2018

* Table analysis does not consider the updated load forecast which will result in higher losses in Alternative 2 relative to the DCAT Project.

5 N-1 Evidence

Q92. Does the N-1 standard apply to the DCAT Project area?

A92. The N-1 standard applies to the DCAT Project area because the transmission system east of GMS (which includes the DCAT Project service area) is presently part of a network system where the Dawson Creek, Groundbirch, Chetwynd, Fort St John and GMS areas are supplied by multiple transmission lines from GMS (1L360, 1L361, 1L364 and 1L374). It falls within the definition of bulk electric system as defined under the MRS regulation. Specifically, the transmission system in the DCAT Project area is operated at 100 kV or greater and is not served by a radial transmission line.

The DCAT Project (and the GDAT project) are planned to ensure that service to the DCAT Project area continues to meet the N-1 standard.

Q93. When the DCAT project is in service, what level of service will existing and new customers receive?

A93. The DCAT Project will allow BC Hydro to serve 185 MW in the DCAT Project area at the N-1 standard. BC Hydro expects load to exceed 185 MW before or soon after the DCAT Project can be brought into service. Accordingly, BC Hydro has advised all new industrial customers that they will need to participate in a remedial action scheme (**RAS**) until a future GDAT project can be brought into service. The RAS will ensure that the addition of new customers will not erode the quality of service to existing customers pending the arrival of the GDAT project.

Q94. What is the status of the GDAT project?

A94. The GDAT project remains in the study phase. Based on the updated load forecast for the DCAT Project area and assuming approval of the DCAT Project, BC Hydro expects to file a GDAT project application in 2013. Based on the updated load forecast, the GDAT project would not provide sufficient

transmission capacity to meet the anticipated peak load in the 30 year study period. In the GDAT project study, BC Hydro will determine system upgrades required subsequent to the GDAT project and the timing of these upgrades. BC Hydro will study the interconnection of new industrial customers and identify the interconnection requirements and any other system upgrades required to facilitate the interconnection.

Q95. What are the implications of the conclusion that the DCAT service area must meet the N-1standard?

A95. Having concluded that service in the DCAT Project area must be to the N-1 standard, it follows that BC Hydro is obliged to serve any customer coming to the system in the area and prepared to comply with the applicable tariff. The System Planning Report included as Appendix B of the Application has been prepared on that basis.

Q96. What is the applicable existing tariff?

A96. TS 6.

6 Tariff Supplement No. 6

Q97. Please summarize the purpose of TS 6?

A97. TS 6 is the Facilities Agreement that must be signed between BC Hydro and a new customer taking electric service from BC Hydro at transmission voltage. It is one of four tariffs that, collectively, define the service that BC Hydro provides to its transmission voltage customers. The other three tariffs are Tariff Supplement No. 5 and Rate Schedules 1823 and 1827.

Q98. What is the significance of TS 6 to the DCAT Project?

A98. TS 6 is among the tariffs under which BC Hydro will provide service to three of the five new industrial customers identified in the load forecast for the DCAT Project. TS 6 also provides the basis for the collection of security and/or contributions from all five customers, pending approval of BC Hydro's Application to amend its Electric Tariff in that respect.

Q99. How will TS 6 affect the two new customers served by the DCAT Project that will receive power at distribution voltage?

A99. BC Hydro has proposed that the Electric Tariff be revised to provide that when a distribution customer with a load of 10 MW or more requires an extension of service, the customer will be responsible for the costs of additions and alterations to the transmission system in the same way that transmission voltage customers are under TS 6. To give effect to this revision, the definition of "System Reinforcement" found in section 2 of Appendix 1 of TS 6, and sections 4, 5 and 13 of TS 6 will apply to these customers.

Q100. When did Tariff Supplement No. 6 come into force?

A100. TS 6 became effective on January 21, 1991, having been approved by the BCUC in Order No. G-4-91. It has remained unchanged since that time. In the 1960s and 1970s, new customers paid for all of the transmission upgrades

that they triggered. This approach was changed by Government in 1987, and a review was then undertaken that led to the current TS 6.

Q101. Please explain the general operation of TS 6.

A101. When new or expanding customers seek service from BC Hydro at transmission voltage, connecting and serving that customer may require additions and alterations to existing BC Hydro facilities, called System Reinforcements. TS 6 determines the extent to which the new customer or load is responsible for the cost of additions or alterations by assigning cost responsibility between BC Hydro and individual customers for System Reinforcements.

TS 6 also defines Customer's Facilities, Basic Transmission Extension and Transmission Connection.

System Reinforcements as defined are distinct from the Transmission Connection that links the existing BC Hydro Facilities with the Customer's Facilities. The Transmission Connection includes any transmission line or related facilities that need to be built to bring the Customers' Facilities within 90 meters of the existing BC Hydro Facilities. A BC Hydro-owned Basic Transmission Extension spans the last 90 meters of the Transmission Connection before it joins BC Hydro's existing system. The customer is responsible to pay for its own facilities and for the Basic Transmission Extension.

The DCAT Project does not include Basic Transmission Extension costs for the individual customer, though these exist on the BC Hydro side of the Point of Delivery. Also, the Project does not include any equipment or costs on the customer side of the Point of Delivery.

TS 6 provides that the connecting customer is responsible for the cost of the System Reinforcement. BC Hydro will provide to the customer an offset

towards the cost of the System Reinforcement. The amount of this offset is capped by the lower of the System Reinforcement costs and an offset formula that is driven, primarily, by a multiple of the first year's revenue expected from the customer.

TS 6 also defines the amount and form of security that customers must post in respect of any costs borne by BC Hydro as an offset to the System Reinforcement and the manner in which the security will be returned to the customer.

Q102. What facilities are included within the definition of System Reinforcement?

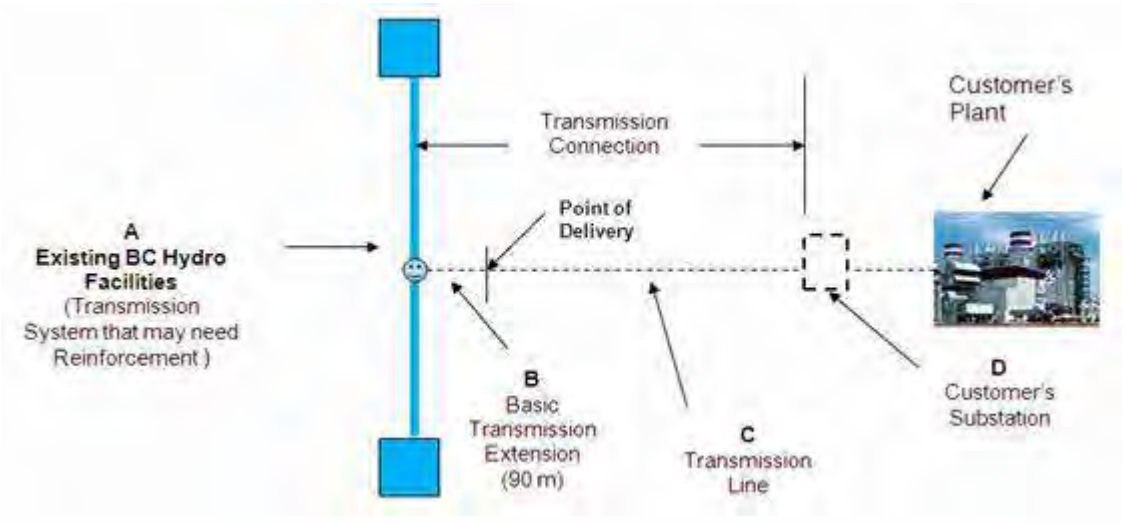
A102. System Reinforcement includes all incremental costs BC Hydro will need to incur to permit its transmission system to provide service. It does not include any incremental generation costs incurred to provide service unless the customer load exceeds 150 MV.A. None of the DCAT Project customers has a load exceeding 150 MV.A.

Q103. Please identify all the facilities that BC Hydro understands the customer will be constructing at its own cost.

A103. TS 6 describes all the facilities required to be built by the customers in order to take service from BC Hydro. The facility components described in TS 6 and illustrated in Figure 5 below are:

- Customer's Substation – this is the receiving station that will transform the BC Hydro supply voltage from 138 kV or 230 kV to the customer's plant voltages.
- Transmission Line – this is the line that extends from the customer's substation at its plant to a point within 90 meters of the existing BC Hydro system.

Figure 5 Facility Components



Q104. Has BC Hydro connected a customer that was in excess of 150 MV.A since TS 6 came into force?

A104. No.

Q105. Is there a historical example of a customer paying for System Reinforcements that included generation costs or 500 kV transmission costs?

A105. No.

Q106. Has BC Hydro ever declined to provide service to any customer willing to assume its responsibilities under TS 6?

A106. No. BC Hydro does not have the discretion to refuse service to an eligible customer that requests it.

BC Hydro's general obligation is expressed in mandatory terms in section 28 of the *Utilities Commission Act* (***UCA***). BC Hydro can only escape this obligation "after a hearing and for proper cause" (s. 28(3)). BC Hydro has no record of ever seeking to employ this escape clause.

Section 3 of Appendix 1 to TS 6 does require customers to demonstrate to BC Hydro that providing service is in the public interest. However, BC Hydro has never interpreted that provision in the Tariff to permit it to discriminate

against certain customers on the basis that their proposed use of power is not in the "public interest". To the contrary, BC Hydro believes that provision of the Tariff is intended to focus on safety and reliability arising from a physical extension of the system by imposing on the customer the obligation to build its interconnecting facilities to a standard acceptable to BC Hydro.

Q107. Has a customer ever formally disputed BC Hydro calculation of its required contribution under TS 6?

A107. Yes, once in 2002. Alberni Aluminum Corporation planned to construct an aluminum smelter on Vancouver Island with a load well in excess of 150 MV.A. BC Hydro would have been required to undertake a significant System Reinforcement to serve this load and would have had to construct additional generation facilities dedicated to providing energy to it.

Because the proposed load was over 150 MV.A, BC Hydro's System Reinforcement costs were to include incremental generation costs. Based on this inclusion, the application of the formula in TS 6 would have required a substantial net contribution after the BC Hydro offset to the customer's System Reinforcement costs.

The customer disputed the imposition of these costs in a complaint filed with the BCUC. The BCUC ruled that BC Hydro was correct to include the generation costs in its calculation.

Ultimately, the project did not proceed and consequently no System Reinforcement costs were paid by the customer.

Q108. Has the availability of alternative sources of supply to the requesting customer ever affected BC Hydro's willingness to provide service to that customer?

A108. No. BC Hydro does not consider the existence of an alternative supply source relevant to its obligation to serve a customer that prefers electric service.

It is worth noting that BC Hydro has objected to providing electric service to existing customers where those customers wish not to use the power themselves but rather to resell it. BC Hydro has consistently resisted being exposed to this form of rate arbitrage and was recently successful in asking the BCUC to provide it with relief in the context of supplying electricity to Zellstoff Celgar.

The substance of BC Hydro's arguments in the Zellstoff Celgar case turned on preventing customers from undertaking the "simultaneous purchase and sale of the same fungible commodity…in different markets to profit from unequal prices in those markets" (BC Hydro Reply Argument in BCUC Project No. 3698351, page 16). Clearly, there is no relationship between this arbitrage activity and the decision of the new DCAT Project customers to use electric power rather than natural gas.

Q109. Please describe how the BC Hydro offset portion of TS 6 operates?

A109. Once the System Reinforcement amount has been determined, it is an independent determination as to how much of that cost will be offset by BC Hydro. This offset is determined by the lesser of the estimated cost of the System Reinforcement or the following formula, as set out in the tariff:

$$I = (R-E)/.135 + B + D$$

Where:

I = BC Hydro's maximum offset toward the cost of System Reinforcement;

R = the incremental revenue as calculated by BC Hydro from the estimated incremental load during the first year of normal operations;

E = the estimated incremental operating and maintenance expense of supplying the incremental load during the first year of normal operations;

B = other benefits to the BC Hydro system, as determined by BC Hydro; and

D = one-half the annual depreciation associated with the estimated total costs of System Reinforcement.

Q110. Does BC Hydro rigorously perform the calculation contemplated by their formula for in every case?

A110. No. BC Hydro first compares the anticipated cost of the System Reinforcement with the anticipated incremental annual revenues from the new load. So long as the net revenue in the first year of normal operations times 7.4 (1/.135) is greater than the System Reinforcement cost, no further calculation is needed. That has proven to be the case in almost all past cases with the result that it has not normally proved necessary to calculate a value for the other variables in the formula. In fact, in the past 10 years TS 6 has been applied 23 times, of which 11 cases resulted in a System Reinforcement. In all of these, the offset formula produced a result in excess of the cost of the System Reinforcement.

Q111. For the purposes of the calculation, how have R and E normally been determined?

A111. R is determined by estimating the revenue to be received from the customer in the first 12 months after it begins normal operations.

E is determined by estimating operating costs associated with the specific portfolio of incremental facilities that BC Hydro must construct to serve the new load. That is, BC Hydro applies an annual operation and maintenance cost to the new facilities that have been identified as System Reinforcements, calculated as a percentage of the capital cost. For loads below 150 MV.A, where no incremental generation costs have been specifically identified, no generation or 500 kV operating or maintenance costs are included.

Q112. If it were to become necessary to calculate a value for D and B above, how would that be done?

A112. D would be equal to one-half the annual depreciation on the capital cost of the System Reinforcement.

B would reflect an allowance of other system benefits that may be associated with the System Reinforcements. BC Hydro has, in fact, never been faced with a situation where, absent a positive value for B, a customer would receive less than a full offset of its System Reinforcement. If it did become necessary, BC Hydro would have to develop a methodology suitable to that circumstance.

Q113. What was the result of taking these steps when calculating each customer's responsibility for System Reinforcement costs in connection with the DCAT Project?

A113. The System Reinforcement costs are equal to the anticipated DCAT Project cost of $219 million. Sixty percent of these costs were allocated to new customers for the reasons elaborated in section 2.7 of the application, and in the response to BCUC IR 1.39.1. The resulting amount of $131.5 million was then allocated pro rata amongst the five customers based on their anticipated loads.

On the revenue side, the five customers are anticipated to contribute approximately $429 million for the purposes of the offset calculation. Because this far exceeds the allocated system improvement costs (or indeed, the entire System Reinforcement costs) no further calculation of the formula was necessary. The initial calculation made it clear the result of the offset formula would far exceed the total System Reinforcement costs.

Q114. Do all System Reinforcements lead to customer contributions?

A114. No. Some upgrades, like the Vancouver Island Transmission Reinforcement project or the Interior to Lower Mainland project, are driven by general system need, not specific customer requests. Such upgrades do not trigger customer contributions.

Q115. Please explain how System Reinforcements were calculated in the DCAT case?

A115. Pursuant to section 4 of Appendix 1 of TS 6, Preliminary Estimates were undertaken (BC Hydro refers to these Preliminary Estimates as Conceptual Reviews). No DCAT customer sought a Detailed Estimate. The Conceptual Review results formed the basis of the forecast DCAT Project cost.

As set out in BC Hydro's Application, the DCAT Project is designed to serve: (1) existing load; (2) two distribution voltage customers; and (3) three transmission voltage customers. This led to some complexity, and a requirement for some decisions to be taken in interpreting TS 6.

BC Hydro started its assessment by determining that 60 per cent of the estimated DCAT Project costs were properly assigned to the five new customers. This was a rounding from a calculated allocation of 64 per cent. From there, BC Hydro determined that all five customers should be treated equally to one another regardless of their supply voltage. To that end, BC Hydro has requested certain amendments to its Electric Tariff.

BC Hydro then undertook the following steps to determine the cost and security responsibility of each customer.

1. Determine System Reinforcement costs for each customer;
2. Apply the first step in the offset formula by comparing BC Hydro's net revenue from each customer in the first year of normal operations times 7.4 to the System Reinforcement cost;
3. Determine the pro-rata security to be collected from each customer in light of its allocated System Reinforcement cost.

Q116. How important was the allocation of 60 per cent to new customers and 40 per cent to existing customers when applying TS 6 to the DCAT Project?

A116. It was not important at all with respect to determining each customer's responsibility for System Reinforcement costs. Even if the DCAT customers had been required to pay 100 per cent of the System Reinforcement costs of $219 million, their collective revenue offset of $429 million (as determined by the formula) would have been more than adequate to offset that cost. Because the calculation is not sensitive to the allocation percentage, BC Hydro has not attempted to refine it and accepts that there are a variety of potentially valid alternative means of calculating that percentage. With respect to security, the allocation determined the extent to which all of the cost of DCAT Project will be secured. Total security of 60 per cent of the capital cost constitutes a major deposit by any measure.

Q117. Should the five DCAT Project loads be consolidated for the purpose of the 150 MV.A determination?

A117. No. The 150 MV.A. threshold is a feature of the definition of System Reinforcement in TS 6. By definition and context, all elements of TS 6 apply to a specific customer taking service from BC Hydro. The entire structure of TS 6 focuses on individual customer load, not on an aggregate load. Having regard to the purposes of TS 6, aggregation would not be appropriate for the purpose of determining the 150 MV.A threshold. Each of the five new customers has distinct corporate interests and the customers are not related. TS 6 presents the unique Facilities Agreement, on an individual basis, for each customer taking service from BC Hydro. Grouping these customers together for the purpose of determining thresholds under the definition of System Reinforcement would not serve the purposes of the Utilities BCUC Act or BC Hydro's tariff.

Q118. Are any of the individual industrial customers loads in excess of 150 MV.A?

A118. No.

Q119. Has BC Hydro applied TS 6 threshold of 150 MV.A to the Groundbirch load, and has this resulted in any different treatment of the Groundbirch load by requiring the customer to provide a contribution in aide of construction, rather than security?

A119. No.

Q120. Please elaborate on Step 3, that is: how was the security to be provided by each customer calculated?

A120. It is in the nature of a reinforcement serving multiple customers that there can be no precise allocation of physical costs to specific customers. To ensure that BC Hydro does not over-collect the total security it requires (the amount of the allocated Preliminary Estimate, subject to the revision described below), BC Hydro used a pro-rating approach to distribute security obligations among the new loads. This approach does not affect the total security collected by BC Hydro to protect ratepayers for the contribution that they make to the DCAT Project.

Once each customer's plant is in normal operation, BC Hydro will re-evaluate the security calculations pursuant to section 5(d)(i) of Appendix 1 of TS 6 as required by that tariff provision, and will make any necessary adjustments at that time. This will reflect the fact that the Agreed Maximum Cost will be the Actual Cost or estimated Actual Cost in cases where no Detailed Estimate was undertaken.

In addition to the security described above, there may be some additional security required from those new customers connecting at transmission voltage. This additional security will serve to protect existing customers against the cost of some customer-specific System Reinforcements that are not within the scope of the DCAT Project.

At this point, it has been determined that BC Hydro will collect such additional security from Shell in the amount of $12.9 million. This amount is in addition to Shell's pro rata share of security in respect of the DCAT Project. It has not been determined yet if incremental security will be required from Murphy or Air Liquide. This determination will be made following the completion of Facilities Studies in respect of these customers' projects. At that point, it will be confirmed that the revenue expected from the new customer (i.e., term R of the contribution formula) remains sufficient to fully offset the cost of the incremental System Reinforcement (although the maximum revenue offset from the formula of $429 million strongly indicates that the revenue will be sufficient).

Q121. Please explain how the security will be released to the customers?

A121. Some initial release of security may be called for by the application of section 5(d)(i) of Appendix 1 of TS 6, as described above.

Following that, BC Hydro will follow the release provisions of section 5 of Appendix 1 of TS 6. For the purposes of this calculation, BC Hydro will recognize the individual security provided by each customer, the individual customer revenue, and other individual parameters required by the release formula. In practice, BC Hydro does an annual review of the customers' electricity purchases and releases security by the amount of these purchases.

Q122. Do the new customers have any ongoing obligations after the return of their security?

A122. No. In the event that the new customers were to leave the system after the return of their security, they would have no further commitments. This reflects the fact that they would be judged to have contributed sufficient revenue to BC Hydro to fully compensate – under the terms of the tariff – the existing customers for the costs that they contributed to the new infrastructure. The

customers acquired no unique rights to the system through their posting of security, and they equally acquire no unique obligations.

7 Update of Project Evidence

Q123. Please describe the progress that has been achieved in respect of taking the DCAT Project forward since November 2011.

A123. Significant activities since November 2011 have included the following:

- Engineering design work has continued
- Property acquisition work and consultation with landowners has continued
- The first portion of the archeological impact assessment (**AIA**) was completed
- Continue Consultations with First Nations
- Updated the schedule and cost estimate

Q124. Can you indicate what you have done in connection with each of these topics?

A124. Yes. BC Hydro has sought to describe the first 4 elements listed above by updating the relevant pages of the applications. The updates are as follows:

- Chapter 4 has been updated to reflect the revised in service date of April 30, 2014. The ISD was delayed by six months to allow more time for the CPCN Process. Similarly, the cost estimate was updated to incorporate the effects of the schedule change, longer CPCN proceeding and project changes that have occurred as Project design has progressed.
- Chapter 5 has been updated to incorporate the completed AIA work.
- Table 6-1 in Chapter 6 has been updated to reflect consultation with additional landowners.
- The cash flow table in Appendix C of the Application has been updated.

- Segment maps have been updated in Appendix D of the Application to reflect some route modifications. Updated route orthophotos are also provided in Appendix D.

- The Milestone Schedule in Appendix E of the Application has been updated.

Updated pages for the Application are being filed concurrently with this Supplemental Evidence as Exhibit B-1-3.

Q125. Has there been any development in siting the Bear Mountain Terminal expansion?

A125. Yes. BC Hydro has undertaken further analysis regarding the layout options for BMT. BC Hydro has been in contact with counsel for Mr. and Mrs. Robinson (the affected landowners) in this regard and has provided them with responses to their questions during the suspension of this proceeding.

8 First Nation Evidence

Q126. Has there been any further agreement between BC Hydro and WMFN in respect of the contemplated impact study?

A126. Yes, the parties have come to an agreement on the scope of the study and it is currently being undertaken.

On November 25, 2011, BC Hydro and WMFN met to discuss the contemplated impact study. During the meeting, the parties reviewed in detail and reached agreement in principle on the draft terms of reference (**TOR**) for a community-based impact assessment study (**IAS**). The parties agreed that the purpose of the IAS would be to identify potential impacts of the DCAT Project, if any, on the WMFN's aboriginal interests. The IAS was to be undertaken by WMFN through its preferred consultant with financial support from BC Hydro. At the meeting, WMFN agreed to seek confirmation of availability from their preferred consultant immediately in order to ensure that the work on the IAS commenced prior WMFN's offices closing for the holiday season.

On November 28, 2011, BC Hydro sent a revised TOR for the IAS to WMFN reflecting the agreement reached between the parties and requested confirmation that it was acceptable to WMFN. As the parties were still in the process of negotiating a Capacity Funding Agreement (**CFA**) which was intended to include funding for the IAS, BC Hydro also offered WMFN an advance to initiate work on the IAS pending the finalization of the CFA.

On November 30, 2011, BC Hydro followed up with a further revised TOR for the IAS in response to a clarification discussed by the parties on November 29, 2011. BC Hydro reiterated that as negotiations on the CFA were ongoing, it was prepared to proceed with completing a separate funding agreement for the IAS if such an approach was preferred by WMFN.

Between December 9, 2011 and January 13, 2012, BC Hydro attempted to contact WMFN by email and phone on seven separate occasions in order to finalize the draft TOR and ensure the work the on the IAS could commence as soon as possible. During one such attempt, BC Hydro emailed WMFN and proposed a schedule of meetings between the parties which coincided with the activities and deliverables under the IAS, to ensure it proceeded in a timely way which would inform the development of the DCAT Project. BC Hydro consistently reiterated its desire to ensure the IAS proceeded in a timely manner and its flexibility to meet at WMFN's convenience to finalize the draft TOR.

WMFN responded to BC Hydro's email and phone messages on January 23, 2012 advising that it had engaged a consultant, and that they had initiated preliminary work on the IAS. WMFN further advised that the draft TOR for the IAS could not be finalized until they had forwarded it to their legal counsel for review. This was done shortly thereafter.

BC Hydro and WMFN met again on February 8, 2012 and finalized the TOR for the IAS. WMFN's preferred consultant is currently in the process of undertaking the work for the IAS.

Q127. What are the deliverables and deadlines provided for in the TOR for the IAS?

A127. The finalized TOR for the IAS provide for the following deliverables and timelines:

Work Plan	**February 28, 2012**
Full Draft Report	**May 31, 2012**
Final Report	**June 30, 2012**

WMFN has also committed to provide BC Hydro information about any significant potential impacts arising from the DCAT Project on WMFN rights as identified through the community interviews. The community interviews will

be completed by the end of March 2012 and the parties have agreed to meet on March 29, 2012 for this purpose. Thus, while the Full Draft Report is not due until the end of May, WMFN will be providing BC Hydro with information regarding any significant potential impacts by the end of March. As BC Hydro has previously stated, while completion of a study earlier in the process would have been preferable, completion of a study at this stage remains useful as decisions on design, alignment, construction practices, and monitoring can still be made and can be informed by the information provided for in the IAS study. BC Hydro will consider the information from the community interviews, the draft report and the final report at the time each is received, and decide what measures to avoid or mitigate impacts, if any, are appropriate.

Q128. Has BC Hydro kept WMFN informed of its intent to recommence the BCUC proceedings in respect of the DCAT Project?

A128. Yes. On January 27, 2012, BC Hydro advised WMFN by email of its intent to resume the BCUC proceeding in respect of the DCAT Project possibly sometime in February. BC Hydro further committed at that time to keep the WMFN informed once BC Hydro a more precise timeframe was decided.

By way of letter dated February 6, 2012, sent to WMFN and copied to the Treaty 8 Tribal Association, BC Hydro formally advised WMFN of its intent to seek to resume the BCUC proceeding possibly sometime in February. BC Hydro copied WMFN on its letter to the BCUC advising all parties that it would soon be requesting that the DCAT Project proceedings be resumed.

Q129. Since the suspension of the proceedings on November 30, 2011, what progress has been made in respect of a Capacity Funding Agreement (CFA)?

A129. BC Hydro and WMFN have come to an agreement on a CFA in respect of the DCAT Project.

From late November 2011 until early February 2012, the parties continued to actively negotiate a mutually agreeable CFA. The parties met on November 25, 2011 and discussed, inter alia, the CFA. On November 30, 2011, BC Hydro sent WMFN a draft CFA reflecting the discussions had during the meeting and invited WMFN to execute the CFA if it was acceptable to them.

As set out in Question 1, between December 9, 2011 and January 13, 2012, BC Hydro attempted to contact WMFN by email and phone on seven separate occasions. Those attempted contacts were made in part to finalize the draft CFA. WMFN responded on January 23, 2011 advising BC Hydro that it still needed to undertake a legal review of the draft CFA.

BC Hydro and WMFN met again on February 8, 2012 and finalized the draft CFA. BC Hydro sent the final draft CFA to WMFN for execution on February 14, 2012 and is currently awaiting receipt of the executed document. On February 24, 2012, BC Hydro provided WMFN with an advance on the CFA to support the work on the IAS.

While a CFA was not concluded until recently, throughout the negotiations process since the suspension, BC Hydro has consistently encouraged WMFN to submit invoices for all costs incurred to date in respect of the DCAT Project consultation process. WMFN has to date not taken BC Hydro up on this offer. Further, BC Hydro was consistently clear during this period that in the absence of a finalized CFA, it was nonetheless willing to provide funding for the IAS.

Q130. What further consultation has BC Hydro undertaken in respect of the DCAT Project with potentially affected First Nations since the suspension of the proceedings was granted?

A130. BC Hydro has continued to keep all potentially affected First Nations apprised of new developments with the DCAT Project. BC Hydro sent all B.C. Treaty 8

First Nations (namely, McLeod Lake Indian Band, Blueberry River Nation, Doig River Nation, Fort Nelson Nation, Halfway River Nation, Prophet River Nation, Saulteau Nation and WMFN) a Project update letter dated February 6, 2012. Attached as Appendix A is a copy of the February 6, 2012 letters (and enclosures) sent to the above noted first Nations. The update included information on the status of the CPCN proceeding in respect of the Project and the revised Project schedule. It also included information and maps concerning modifications to the route alignment, an interim report on the results on the Archaeological Impact Assessment (**AIA**), and information on the passive reflector site now included in the Project scope. BC Hydro invited First Nations to provide feedback on these and any other aspects of the DCAT Project (Refer to the February 6, 2012 letter).

To date the only First Nation that BC Hydro has received feedback from in response to this update was WMFN. During the February 8, 2012 meeting between BC Hydro and WMFN, WMFN indicated general support for some of the measures proposed for avoiding impacts to archaeological sites (e.g., hand clearing). WMFN also sought further information about the proposed site of the passive reflector and BC Hydro plans to further discuss the proposed site with both the WMFN and Saulteau First Nations.

Q131. Have there been any other new developments in respect of consultation with First Nations that the BCUC should be aware of?

A131. On October 20, 2011, BC Hydro received a letter from the Kelly Lake Cree Nation (**KLCN**) wherein KLCN asserted rights over the Project area and sought to be consulted by BC Hydro in respect of the DCAT Project.

BC Hydro understands that KLCN is one of at least three groups that claim to represent the aboriginal community of Kelly Lake. KLCN is not an Indian band under the Indian Act, nor is it recognized as a First Nation or rights-bearing Metis group by the Province.

BC Hydro responded by way of letter to the KLCN on February 24, 2012. BC Hydro provided the KLCN further information about the DCAT Project and review process, committed to providing them further project updates, and welcomed KLCN's input on the DCAT Project. While BC Hydro raised the uncertainty of the representative status of the KLCN in its letter, it provided that it remained open to receiving and seriously considering information exclusively in the possession of the KCLN regarding KCLN's history, composition and organization. In closing, BC Hydro expressed its willingness to meet with the KLCN at such time as the KLCN has further information to share. Also Attached at Appendix A is a copy of the February 24, 2012 letter sent to KLCN.

Dawson Creek/Chetwynd Area Transmission Project

BC hydro

Appendix

A

First Nations Consultation Update

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Fax: (604) 528-2822
Email: stewart.dill@bchydro.com

February 6, 2012

Chief Joe Apsassin
Blueberry River First Nations
PO BOX 3009
Buick Creek, BC V0C 2R0

BY: COURIER

Dear Chief Apsassin:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

On November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. Design and other project work is continuing in the interim.

Route Alignment

BC Hydro submitted a preferred route alignment for the DCAT Project as part of its CPCN application to the BCUC in July 2011. However, as a result of detailed design work including information from geotechnical investigations, the route has shifted slightly in some locations. The maps enclosed with this letter, which depict the DCAT Project in three segments (West, Central and East), show the new route alignment. The maps also highlight (with red rectangles) the three areas where the route has been adjusted in the West and Central Segments.

Archaeological Assessment

An archaeological assessment of the DCAT Project is ongoing. An interim report that describes the results of the assessment work completed to date, as well as the work that remains to be done, is enclosed with this letter. Nineteen archaeological sites have been identified to date. BC Hydro intends to adopt all of the recommendations set out in the report in order to avoid any impacts to the sites from the Project. BC Hydro is pleased that the Blueberry River First Nations have been involved in the field work to date; opportunities to participate in the remaining field work will also be made available.

BC hydro
FOR GENERATIONS

Reflector Site

As design work has progressed, Project engineers have determined the need for a passive reflector to enable communication between the proposed new Sundance Substation and the rest of BC Hydro's system, to facilitate transmission grid operations. A passive reflector is a billboard-type structure, approximately 8 by 12 feet, that will reflect microwave communication signals from the new Sundance Substation to the existing Chetwynd Substation. BC Hydro is proposing to construct the reflector at a site approximately 2.5 km west of Chetwynd. The site is located on Crown land and is approximately 0.4 ha in size. The site will be cleared by hand and no new road access is planned. An environmental review, which included a desktop review and reconnaissance level field survey, concluded that impacts to fish, wildlife and vegetation will be minimal, with further field surveys planned prior to construction. An archaeological assessment of the site will be completed in Summer 2012. Further information on the proposed reflector site can be found in the enclosed draft Management Plan, which will accompany BC Hydro's Crown land tenure application.

Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the Blueberry River First Nations' input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Blueberry River First Nations, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

British Columbia Hydro and Power Authority
10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
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BC hydro
FOR GENERATIONS

Stewart Dill
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February 6, 2012

Chief Norman Davis
Doig River First Nation
PO BOX 56
Rose Prairie, BC V0C 2H0

BY: COURIER

Dear Chief Davis:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

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Archaeological Assessment

An archaeological assessment of the DCAT Project is ongoing. An interim report that describes the results of the assessment work completed to date, as well as the work that remains to be done, is enclosed with this letter. Nineteen archaeological sites have been identified to date. BC Hydro intends to adopt all of the recommendations set out in the report in order to avoid any impacts to the sites from the Project.

BC hydro
FOR GENERATIONS

Reflector Site

As design work has progressed, Project engineers have determined the need for a passive reflector to enable communication between the proposed new Sundance Substation and the rest of BC Hydro's system, to facilitate transmission grid operations. A passive reflector is a billboard-type structure, approximately 8 by 12 feet, that will reflect microwave communication signals from the new Sundance Substation to the existing Chetwynd Substation. BC Hydro is proposing to construct the reflector at a site approximately 2.5 km west of Chetwynd. The site is located on Crown land and is approximately 0.4 ha in size. The site will be cleared by hand and no new road access is planned. An environmental review, which included a desktop review and reconnaissance level field survey, concluded that impacts to fish, wildlife and vegetation will be minimal, with further field surveys planned prior to construction. An archaeological assessment of the site will be completed in Summer 2012. Further information on the proposed reflector site can be found in the enclosed draft Management Plan, which will accompany BC Hydro's Crown land tenure application.

Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the Doig River First Nation's input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Doig River First Nation, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

British Columbia Hydro and Power Authority
10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Fax: (604) 528-2822
Email: stewart.dill@bchydro.com

February 6, 2012

Chief Kathy Dickie
Fort Nelson First Nation
2026 Kennay-Yah Road, Mile 295
Alaska Hwy, RR1
Fort Nelson, BC V0C 1R0

BY: COURIER

Dear Chief Dickie:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

On November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. Design and other project work is continuing in the interim.

Route Alignment

BC Hydro submitted a preferred route alignment for the DCAT Project as part of its CPCN application to the BCUC in July 2011. However, as a result of detailed design work including information from geotechnical investigations, the route has shifted slightly in some locations. The maps enclosed with this letter, which depict the DCAT Project in three segments (West, Central and East), show the new route alignment. The maps also highlight (with red rectangles) the three areas where the route has been adjusted in the West and Central Segments.

Archaeological Assessment

An archaeological assessment of the DCAT Project is ongoing. An interim report that describes the results of the assessment work completed to date, as well as the work that remains to be done, is enclosed with this letter. Nineteen archaeological sites have been identified to date. BC Hydro intends to adopt all of the recommendations set out in the report in order to avoid any impacts to the sites from the Project.

BC hydro
FOR GENERATIONS

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Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the Fort Nelson First Nation's input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Fort Nelson First Nation, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

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10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
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Email: stewart.dill@bchydro.com

February 6, 2012

Chief Russell Lily
Halfway River First Nation
PO BOX 59
Wonowon, BC V0C 2N0

BY: COURIER

Dear Chief Lily:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

On November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. Design and other project work is continuing in the interim.

Route Alignment

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BC hydro
FOR GENERATIONS

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Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the Halfway River First Nation's input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Halfway River First Nation, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

British Columbia Hydro and Power Authority
10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Email: stewart.dill@bchydro.com

February 24, 2012

Chief KWARAKWANTE Cliff Calliou
As'in'l'wa'chi Ni'yaw Tribe
Kelly Lake Cree Nation
PO Box 66
Tomslake, BC V0C 2L0

BY: EMAIL

Dear Chief Calliou:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing in response to your letter of October 20, 2011. As you are aware, BC Hydro is proposing to build a new transmission line between east of Chetwynd, BC and Dawson Creek, BC. An application in respect of the DCAT Project was made to the BC Utilities Commission on July 11, 2011.

BC Hydro is pleased to provide you with additional information regarding the project. Please find enclosed a project backgrounder including a map. Additional information can be found on BC Hydro's website http://www.bchydro.com/energy_in_bc/projects/dcat.html. Further project updates will be shared with you going forward and we welcome your input.

On the question of whether BC Hydro should be consulting with the KCLN on the DCAT Project as an aboriginal group, BC Hydro has noted in the context of other BC Hydro projects in the Peace Region, that the KLCN is not currently recognized by either the federal or provincial Crowns as a First Nation under Section 35 of the *Constitution Act*. We also note that you are currently in litigation with the Federal Government on this matter. Consistent with BC Hydro's best practices approach to consultation, BC Hydro remains open to receiving information exclusively in the possession of the KCLN regarding KCLN's history, composition and organization to which we will give serious consideration.

We would be pleased to meet with you at such time as you have further information to share with us in this regard.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

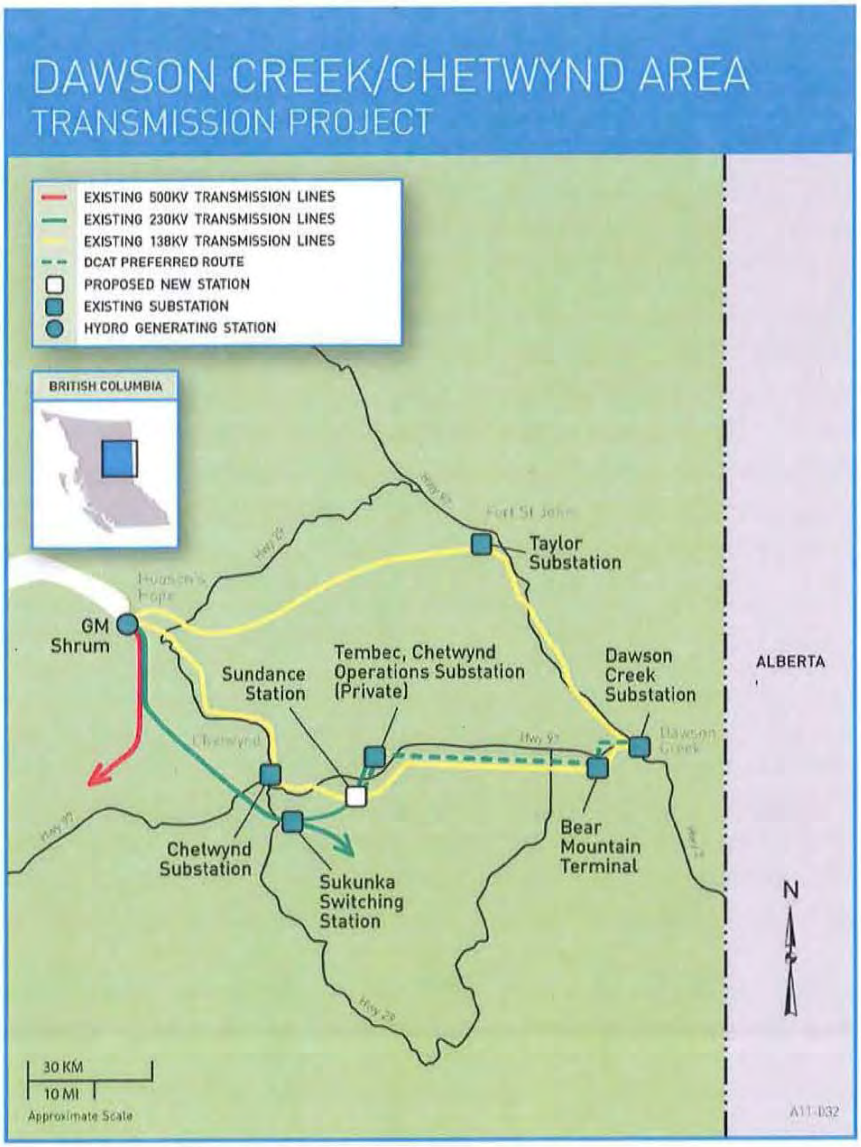
cc: Linette Hodges, Kelly Lake Cree Nation

Enclosure

Demand for electricity in the South Peace/ Dawson Creek area is growing rapidly. This is primarily due to natural gas exploration and development in the nearby Montney shale gas deposits. Over the next 10 years, the annual rate of load growth in the South Peace is expected to be 10 times greater than for the BC Hydro system as a whole.

The planned Dawson Creek/Chetwynd Area Transmission (DCAT) project will support the rapidly growing demand for electricity in the South Peace area. The DCAT project includes:

- A new substation (Sundance) located about 19 km east of Chetwynd, near Highway 97
- A new 230 kilovolt (kV) double circuit overhead transmission line, approximately 60 km long, from Sundance Substation to Bear Mountain Terminal (BMT). BMT is located about 12 km west of the City of Dawson Creek
- Expansion of BMT and Dawson Creek Substations (DAW)
- A new 230 kV double circuit overhead transmission line 12 km long, between BMT and DAW
- A passive reflector near Chetwynd Substation, to facilitate communication between Sundance Substation and other parts of the system



APPROVALS REQUIRED

Before construction can begin, DCAT will require a Certificate of Public Convenience and Necessity (CPCN) from BC Hydro's regulator, the British Columbia Utilities Commission (BCUC). BC Hydro filed an Application for a CPCN in July 2011.

The Application included the results of our planning, environmental and engineering studies; information gathered through First Nations and public consultation; and justification of the project, including our preferred route for the new transmission line.

The CPCN Application Review process is open to public participation. You can find more information on the BCUC website, **bcuc.com**, or access the Application through the BC Hydro and the BCUC websites.

ENVIRONMENT

DCAT will not require an Environmental Assessment Certificate and it is not expected to require approval under the Canadian Environmental Assessment Act.

However, environmental studies are still an important part of planning the project. The following types of studies are being conducted along the planned right-of-way corridor:

- **Archaeology**—non-invasive assessment of archaeological potential
- **Fisheries and aquatics**—including identification of streams that would be crossed by the proposed new circuit; and fish and fish habitat survey up- and downstream of crossing locations
- **Wildlife**—including habitat and species surveys and a breeding bird survey
- **Vegetation**—including vegetation resources, rare plant and ecological community surveys
- **Geotechnical**—investigating substrate stability

DRAFT SCHEDULE

Milestone	Date (subject to change)
First Nations, Stakeholder and Public Consultation	Spring 2010–ongoing Open houses were held in February 2011
Environmental study work	Started 2010
Submit application for CPCN	July 2011
Right-of-way/land acquisition	2012
Construction	Late 2012–2013
In-service	Early 2014

FOR MORE INFORMATION

If you'd like more information on the DCAT Project, please visit the DCAT section of BC Hydro's website: **bchydro.com/energy_in_bc/projects/dcat.html**

If you have any questions, please contact

Lesley Wood
BC Hydro Stakeholder Relations
Phone: **604 623 4472**
Toll free: **1 866 647 3334**
Email: **stakeholderengagement@bchydro.com**

BC hydro
FOR GENERATIONS

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BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Fax: (604) 528-2822
Email: stewart.dill@bchydro.com

February 6, 2012

Chief Derek Orr
McLeod Lake Indian Band
General Delivery
McLeod Lake, BC V0J 2G0

BY: COURIER

Dear Chief Orr:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

On November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. Design and other project work is continuing in the interim.

Route Alignment

BC Hydro submitted a preferred route alignment for the DCAT Project as part of its CPCN application to the BCUC in July 2011. However, as a result of detailed design work including information from geotechnical investigations, the route has shifted slightly in some locations. The maps enclosed with this letter, which depict the DCAT Project in three segments (West, Central and East), show the new route alignment. The maps also highlight (with red rectangles) the three areas where the route has been adjusted in the West and Central Segments.

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BC hydro
FOR GENERATIONS

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Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the McLeod Lake Indian Band's input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the McLeod Lake Indian Band, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

British Columbia Hydro and Power Authority
10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Fax: (604) 528-2822
Email: stewart.dill@bchydro.com

February 6, 2012

Chief Lynette Tsakoza
Prophet River First Nation
PO BOX 3250
Fort Nelson, BC V0C 1R0

BY: COURIER

Dear Chief Tsakoza:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

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BC hydro
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Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the Prophet River First Nation's input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Prophet First Nation, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

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bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
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Email: stewart.dill@bchydro.com

February 6, 2012

Chief Harley Davis
Saulteau First Nations
PO BOX 1020
Chetwynd, BC V0C 1J0

BY: COURIER

Dear Chief Davis:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

On November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. Design and other project work is continuing in the interim.

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BC hydro
FOR GENERATIONS

Reflector Site

As design work has progressed, Project engineers have determined the need for a passive reflector to enable communication between the proposed new Sundance Substation and the rest of BC Hydro's system, to facilitate transmission grid operations. A passive reflector is a billboard-type structure, approximately 8 by 12 feet, that will reflect microwave communication signals from the new Sundance Substation to the existing Chetwynd Substation. BC Hydro is proposing to construct the reflector at a site approximately 2.5 km west of Chetwynd. The site is located on Crown land and is approximately 0.4 ha in size. The site will be cleared by hand and no new road access is planned. An environmental review, which included a desktop review and reconnaissance level field survey, concluded that impacts to fish, wildlife and vegetation will be minimal, with further field surveys planned prior to construction. An archaeological assessment of the site will be completed in Summer 2012. Further information on the proposed reflector site can be found in the enclosed draft Management Plan, which will accompany BC Hydro's Crown land tenure application.

Project Schedule

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BCH continues to welcome the Saulteau First Nations' input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the Saulteau First Nations, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Brooke Dutka, Project Manager

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

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10th Floor, 6911 Southpoint Drive, Burnaby, BC V3N 4X8
bchydro.com

BC hydro
FOR GENERATIONS

Stewart Dill
Aboriginal Relations and Negotiations
Phone: (604) 515-8690
Fax: (604) 528-2822
Email: stewart.dill@bchydro.com

February 6, 2012

Chief Roland Willson
West Moberly First Nations
PO BOX 90
Moberly Lake, BC V0C 1X0

BY: COURIER

Dear Chief Willson:

Re: Dawson Creek/Chetwynd Area Transmission (DCAT) Project

I am writing to provide you with an update regarding BC Hydro's proposed DCAT Project.

CPCN Application

As you are aware, on November 30, 2011, the BC Utilities Commission (BCUC) granted a request from BC Hydro for a temporary suspension of the Certificate of Public Convenience and Necessity (CPCN) proceeding for the Project. The suspension was requested to allow BC Hydro additional time to consider, together with government, significant policy issues raised by the Commission and interveners. No timetable was set for resumption of the proceeding. However, as I recently informed you, BC Hydro intends to seek to resume the BCUC proceeding in respect of the Project, possibly sometime in February 2012. Design and other project work is continuing in the interim.

Route Alignment

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Project Schedule

Provided the Project is approved by the BCUC, construction is expected to commence in late 2012. The current anticipated in-service date for the DCAT Project is early 2014.

BCH continues to welcome the West Moberly First Nations' input on all aspects of the DCAT Project. If you have any concerns that the Project may impact the rights or interests of the West Moberly First Nations, or you have any questions or require further information about the Project, please do not hesitate to contact me.

Sincerely,

Stewart Dill
Senior Aboriginal Relations Coordinator

Cc: Bruce Muir, Land Use Manager, West Moberly First Nations
Shona Nelson, Treaty 8 Tribal Association
Brooke Dutka, Project Manager, BC Hydro

Encl: Maps (3)
Archaeology report
Reflector site draft Management Plan

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